NATUR CYMRU

A Review of WILDLIFE in Wales

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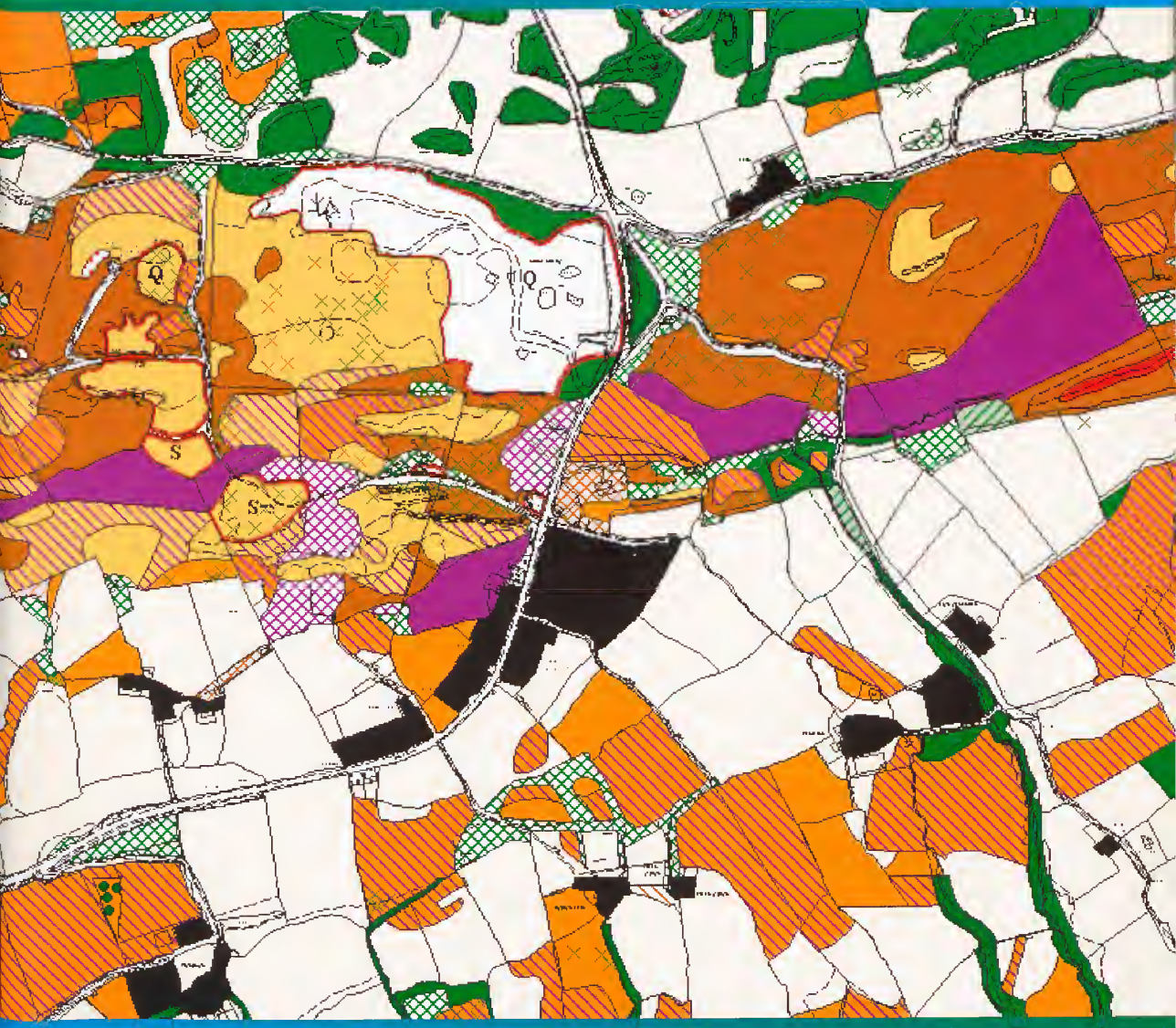

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NATUR CYMRU

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Articles are published in the language in which they are submitted. They are followed by summaries in the other language, and some regular columns appear in both languages. If you would like to receive a translation of any article, please contact the editor.

Cefnogir ***Natur Cymru*** gan bartneriaeth o gyrff sy'n aelodau o Grŵp Bioamrywiaeth Cymru. Y rhain yw: Cyngor Cefn Gwlad Cymru, y Comisiwn Coedwigaeth, Llywodraeth Cynulliad Cymru, Amgueddfeydd ac Orielau Cenedlaethol Cymru, Cymdeithas Frenhinol er Gwarchod Adar, Ymddiriedolaethau Bywyd Gwyllt Cymru, a WWF.

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Bwriedir i ***Natur Cymru*** hyrwyddo a chyfnewid gwybodaeth am fioamrywiaeth a hyrwyddo dadl. Nid yw'r farn a fynegir yn y cylchgrawn hwn o anghenraid yn farn y noddwyr. Anfonwch erthyglau ar gyfer y rhifyn nesaf, yn y Gymraeg neu'r Saesneg, erbyn 14ed Ebrill 2003. Os oes gennych wybodaeth, erthyglau neu waith celf y credwch a allai fod o ddiddordeb i'r darllenwyr, cysylltwch â'r Golygydd os gwelwch yn dda.

Natur Cymru is intended to promote the exchange of information about biodiversity and encourage debate. The views expressed in this magazine are not necessarily those of the sponsors. Please submit articles for the next issue, in Welsh or English, by 14th April 2003. If you have information, ideas for articles or artwork which you think might be of interest to readers, please contact the Editor.

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Golygyddol

Mae blagur gwyrdd y gwanwyn yn prysur ddod yn lle dillad carpiog llwm y gaeaf. Dyma'r adeg ar y flwyddyn yr wyf yn ei mwynhau orau. Mae cynnwrf yn y pridd, mae'r dail yn dechrau ymledu, ac mae amffibiaid yn silio. Mae cryfder yr haul yn llawn addewidion, gan greu cynnwrf mewn coed a chaeau, ffermydd a gerddi. A dyna i chi wahanol synau'r gwanwyn: cân bersain y robin goch yn datgan mai ef yw brenin ei diriogaeth, brefu ŵyn bach, rhuo peiriant torri glaswellt ac arogl glaswellt newydd ei dorri – maen nhw i gyd yn arwydd o egni'r tymor arbennig yma. Eto i gyd, y tu hwnt i sicrwydd y calendr, mae yna newid ar ddod. Fel y sylwodd Fred Slater wrth wylio bywyd gwyllt Llysdinam, dydi'r tymhorau ddim fel yr oedden nhw.

Ys dywedodd Alaistair Moralee, efallai fod synau atgofus y gwanwyn – cri'r gylfinir, er enghraifft – bellach yn hiraethus yn hytrach na bod yn wylofus. Ond mae Ynys Môn yn trio'i gorau glas, serch hynny, wrth i'r gwaith o adfer ein treftadaeth gwlyptirol ddechrau o ddifrif.

Mae gennym ni erthyglau eraill sy'n sôn am adfer elfennau gorau ein cynefinoedd ar gyfer bywyd gwyllt, yn ogystal. Mae rhosydd gwlyb, isel Sir Benfro yn werthfawr tu hwnt, er gwaetha'r ffaith y gall newidiadau ddod i'w rhan yn rhwydd iawn, boed hynny trwy ddiffyg pori, trwy ddiffyg dŵr neu drwy effaith llygredd. Disgrifia Andrew Tuddenham yr hyn sy'n cael ei wneud er mwyn adfywio'r rhostiroedd yma. Trwy gofio'r hyn sydd wedi digwydd yn y gorffennol a thrwy sylwi'n fanwl ar bethau, cynigia Stephen Evans y dylai dulliau rheoli newydd sicrhau dyfodol rhai o'r planhigion arbennig sydd i'w cael yn y llecynnau yma.

Nid sefydliadau mawr yn unig sy'n gweithio o blaid natur ac yn cael y wefr o weld planhigion ac anifeiliaid yn elwa. Gydag amser a gwaith caled, fe all unigolion wneud gwahaniaeth, a chael pleser mawr eu hunain yn ogystal â rhoi pleser i eraill. Yn wir, mae erthygl Ian Callan, sy'n adrodd hanes ei ardd 'bywyd gwyllt', yn dyst o hyn, yn ogystal â bod yn ffordd o godi'r ysbryd!

Mae pibyddion y mawn a chwtiaid aur yn bridio o hyd yn ucheldiroedd Cymru, fel y nododd Reg Thorpe. Gan eu bod nhw'n hapusach ar dwndrâu a gorgorsydd Sgandinafia a Gwlad yr Iâ, efallai dydyn nhw ddim yn croesawu'r newid yn y tymhorau. Yn sicr, fe fydd pobl yn chwilio'n ddyfal amdanyn nhw, gan bryderu yn eu cylch a pheri gwneud rhywbeth os bydd angen. Mae pobl yn deall mwy ar yr amgylchedd ac yn ymrwymo mwy i'w warchod bob dydd. Yn y byd ôl-ddiwydiannol sydd ohoni heddiw, mae'r amgylchedd yn bwysig iawn i'r economi. Gobeithio y bydd y broses o gydnabod hyn oll yn parhau, ni waeth beth fo'r amgylchiadau gwleidyddol wedi etholiadau'r Cynulliad.

Er gwaethaf yr holl ansicrwydd yn sgîl y newid yn yr hinsawdd, fe fydd y tymhorau'n parhau. Maen nhw'n dod â mwynhad mawr i ni wrth newid ac addasu byth a hefyd. Fe fydd ein rhifyn yn yr haf yn canolbwyntio ar gynhyrchu bwyd a ffermio, a da o beth fyddai cofio bod yr arferion yma'n drwm dan ddylanwad y tymhorau.

Ac yn olaf: mae cylchgrawn *Natur Cymru* yn dathlu ei ben-blwydd yn ddwyflwydd, a diolch am hynny mae eich cefnogaeth chi, ddarllenwyr, yn rhedeg yn iach trwy'i wythiennau, ac mae'r erthyglau amrywiol a thoreithiog sy'n cael eu cynnwys ynddo'n rhoi asgwrn cefn go dda iddo! Felly, dyma amser da i gynnig bargen hyd yn oed yn well i danysgrifwyr – rhifyn ar gyfer pob tymor. Ac mae gwell i ddod!

James Robertson

Editorial

The drab rags of winter are giving way to the green shoots of spring. This is the time I like best. The soil is stirring, leaves are unfurling, amphibians spawning. The sun's growing strength is full of promise, stimulating activity in woods and fields, farms and gardens. The sweet song of a robin advertising its territory, the bleating of a lamb, the roar of a lawnmower and the smell of cut grass, are manifestations of the vitality of life at this particular season. Yet underneath the reassuring certainties of the calendar, changes are afoot. The seasons are not quite what they used to be, as Fred Slater's observations of wildlife at Llysdinam reveal.

Photo: CCW.

Lapwing.

As Alastair Moralee points out, that evocative sound of spring, the call of the curlew, may be turning from plaintive to nostalgic. Not for want of trying on Anglesey, though, as the restoration of our wetland heritage gathers pace.

We have other articles on restoring the best of our wildlife habitats, too. The low-lying, wet heaths of Pembrokeshire are as precious as they are vulnerable to change, whether from lack of grazing, lack of water or the effects of pollution. Andrew Tuddenham describes what is being done to bring these heathlands to life. Drawing on history and observation, Stephen Evans proposes a new management technique to secure the future of some of the plant specialities of these places.

It is not only big organisations which are working with the grain of nature and having the thrill of seeing plants and animals benefit. With energy and time, individuals can make a difference, and derive much pleasure for themselves and others. Ian Callan's uplifting account of his wildlife garden provides the evidence.

Dunlin and golden plover still breed in the uplands of Wales, as Reg Thorpe reports. More at home on the tundra and blanket bog of Scandinavia and Iceland, they may not welcome the changing seasons. What is sure is that people will be looking out for them, raising concerns and ready for action. Environmental understanding and commitment are gaining ground all the time. In this post-industrial age, the environment is becoming an engine for economic activity. Let us hope that recognition of this importance continues to grow, whatever the political landscape after the forthcoming Assembly elections.

Despite the uncertainties wrought by climate change, the seasons will remain. They offer the pleasures of an ever-changing world about us. Their influence on the production of food and farming, on which our summer edition will focus, is profound.

A final seasonal thought: *Natur Cymru* is two years old, with a healthy circulation and a varied and plentiful supply of articles. Now is a good time to offer subscribers an even better deal – an edition for each season. Watch this space!

James Robertson

The **habitat survey** *of Wales*

Photo: Peter Rhind/CCW

View of Nant Ffrancon, Snowdonia

Wales may be unique in having an intensive field-by-field survey of the natural riches of all its countryside. The resulting maps are a goldmine of information, and are helping to locate the best places at which to conserve and restore habitats. ***Tim Blackstock*** *and* ***Liz Howe*** *report.*

The rural landscapes of Wales are essentially pastoral environments, fashioned over centuries by livestock farming. Over the unenclosed hill country there are extensive tracts of grass and heather moorland, while in the farmed lowlands remnant patches of broadleaved woodland, heath and mire are dotted over a matrix of lush green fields which extend to the coastal fringe. But just how much land is covered by different forms of highly managed or more natural habitats? Where exactly are the best surviving wildlife habitats and those in need of restoration?

To find answers to such questions, teams of skilled surveyors have built up a detailed inventory of the vegetation cover of virtually the whole land surface of rural Wales. The findings of this intensive, painstaking vegetation survey are now available as a unique set of maps covering the country.

Photo: Liz Howe/CCW

Surveying Cors Erddreiniog

Early beginnings

The project started by tackling the uplands, over the period 1979-1989. Plant communities across some 300,000 hectares (about 15% of the land surface) were recorded over many of the hill ranges. At that time, the then Nature Conservancy Council needed information on the vegetation cover to assess impacts of commercial forestry schemes and livestock grazing on precious wildlife habitats.

In 1987 attention was given to the lowlands, initially to find what little remained of the unimproved and often ancient pastures and hay meadows in fields below the mountain wall. To begin with, field workers attempted to locate sites from existing sources of information, and by rapid visits to

likely places. It soon became clear that the whereabouts of old grasslands was not predictable, and that a thorough field-by-field search was the only satisfactory approach. If the search had to be undertaken throughout the enclosed lowlands, the next logical development was to record all of the habitats encountered. Thus, the habitat survey of Wales was launched in the lowlands.

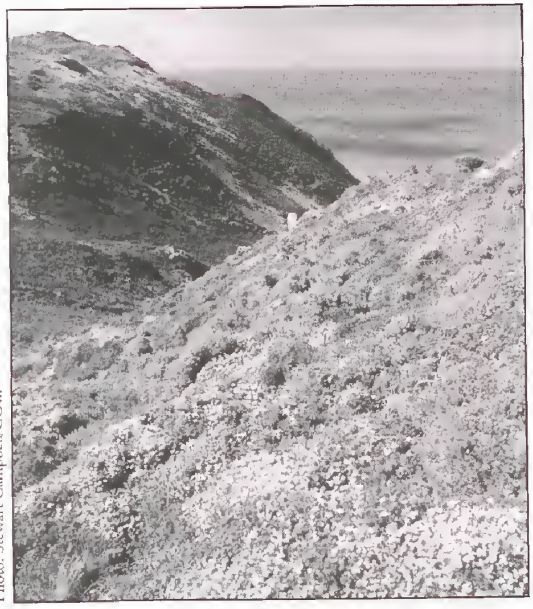


Photo: Stewart Campbell/CCW.

How the survey was carried out

First, we had to decide how habitats and vegetation were to be classified, and train survey teams in their use. The classification we have adopted (known as the 'Phase I' classification) has a simple structure, and its components are mostly familiar to naturalists and ecologists in Britain. Major habitat formations, such as woodland, heathland, mire and coastland, are divided into subordinate categories; for example, mires can be mapped as bogs, fens and flushes, which are further separated into near-natural and highly modified forms.

We then divided the country into twelve survey areas and small teams began work initially in three of these areas. With the establishment of the Countryside Council for Wales in 1991, additional impetus and resources were given to the work. The teams were also able to complete a survey of the remaining upland territory, covering some 100,000 hectares. The findings from the uplands and lowlands were subsequently combined to provide a comprehensive picture of both the wildlife habitats and more artificial land cover of Wales at the end of the 20th century.

In the field, surveyors made initial reconnaissance observations from hill-tops and other vantage points, with the aid of aerial photographs, to identify the pattern of habitats in a new survey location. We sought permission from farmers and other landowners to examine and map habitats which were not discernible from public rights-of-way. Surveyors identified individual habitat patches and drew boundaries on 1:10,000 scale OS maps. Fine-scale habitat mosaics are commonplace in many parts of Wales, and in the uplands these were often recorded as mixed patches. Surveyors were usually able to cover between 100 and 300 hectares in a day. We worked hard to minimise mapping errors and ensure a consistent approach to habitat definition, through meetings and training sessions with the whole team. By the end of the 1997 field season, almost comprehensive coverage of Wales had been achieved.

We then prepared coloured habitat maps, and measured habitat composition and abundance in each 1-km square. More recently, the boundaries of different habitat patches have been digitised and they are now available for more complex analysis.

Major trends in habitat cover

The facts and figures that emerge from the survey work provide a clear and detailed picture of the land cover of Wales from a wildlife viewpoint. Grassland habitats are overwhelmingly prevalent, but the great majority of these have been agriculturally improved and have little wildlife value. Nevertheless, there also remain many high quality semi-natural habitats, including some of the outstanding examples in southern Britain of upland heathland and blanket bog, broadleaved woodland, limestone grassland and fen, and sea-cliff, sand dune and estuarine systems. The cover of a selection of key habitats in Wales is given in

Table 1; summary cover statistics and distribution are shown in *Figs 1* and *2*.

Table 1 **Cover statistics for a selection of habitats in Wales (1979-1997).**

	Cover (kha)		
	Lowland	Upland	Total
Woodland			
Broadleaved	86	2	88
Coniferous	124	44	168
Dense scrub	13	1	14
Grassland			
Unimproved dry	23	109	132
Marshy	35	29	64
Improved	1,013	14	1,027
Bracken and Heathland			
Bracken	30	33	63
Dwarf-shrub heathland	13	79	92
Mire			
Bog	4	54	58
Fen	3	2	5
Coastal			
Saltmarsh	6		6
Sand-dune	6		6
Maritime cliff	1		1

Uplands

Above the upper level of enclosure (some 20% of Wales), expanses of dry acidic grassland are now the major land cover; there are extensive stands, often with abundant sheep's fescue, common bent and mat grass, over many hill ranges including northern Snowdonia, Plynlimon and the Brecon Beacons. But dry heathland is also abundant where grazing levels and traditional management have not suppressed the shrub cover, as in the Berwyn, Cader Idris and Rhinog ranges. Overall, the grass:heath ratio for upland Wales is about 1.5:1, and this could be altered to favour heathland by less intensive grazing and burning management.

Rain-fed blanket bog is another mainstream upland formation, and large tracts of peat deposits on gently undulating terrain are widely distributed. There are impressive examples on Berwyn, Migneint and neighbouring hills where bogmoss (*Sphagnum*) is still a major constituent of the plant communities. It is over these relatively featureless but untamed peatlands of north-central Wales in particular where a sense of wilderness can still be experienced. On the other hand, there has been extensive degradation over equivalent formations in southern Wales where blanket peats now bear large stands of vegetation dominated by purple moorgrass, hare's-tail cottongrass and heather, but growth of bogmoss is far more restricted.

Bracken stands are widespread, especially at low to middle altitudes, where many of the major conifer plantations are also situated, but deciduous woodland and scrub are virtually absent.

Below the mountain wall

Woody vegetation becomes more prominent at the upland fringes. Here in the *ffridd* zone it may be associated with a distinctive mixture of heathland, flush and bracken, as well as both unimproved and improved grassland, in partially enclosed farmland. Semi-natural habitat thins out markedly at lower altitudes as farming practice is intensified.

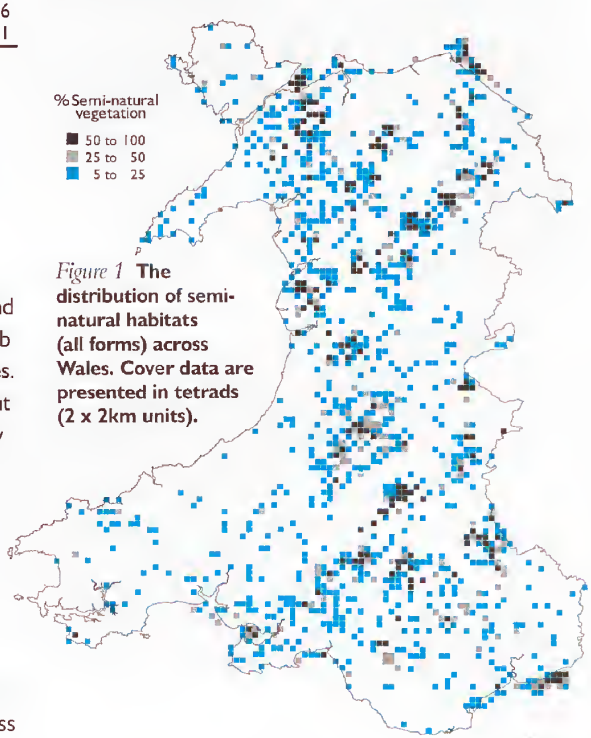
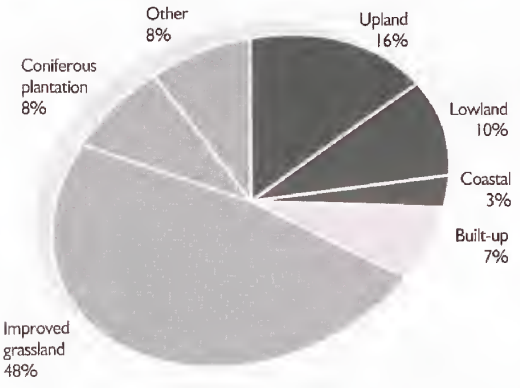


Figure 1 **The distribution of semi-natural habitats (all forms) across Wales. Cover data are presented in tetrads (2 x 2km units).**

The latter half of the 20th century saw a revolution in British agriculture which in Wales culminated in intensive sheep and, to a lesser extent, beef

production. Grasslands were transformed and productive rye grass/white clover swards prevail over much of the enclosed lowlands – over 1,000,000 hectares, or virtually half the land surface, was mapped as improved grassland. Arable land, by contrast, is much less abundant with some 60,000 hectares recorded. Many semi-natural habitats (composed predominantly of native species) lost ground to the expansion of agricultural grassland, and there has been considerable fragmentation of woodlands, heathlands, fens and species-rich meadows and pastures in the lowlands.

Figure 2 **Proportion of semi-natural and modified habitat, and built-up land, in Wales**



While the overall picture is gloomy from a wildlife viewpoint, with many species receding as their habitats have declined, there are still important concentrations of various formations in different parts of lowland Wales. Broadleaved woodland, for instance, has a major stronghold in southern Snowdonia where many Atlantic mosses and liverworts survive. Fen habitats are richly represented in the Llŷn Peninsula and Anglesey where a notable assemblage of rare calcareous-mire species is found. The distribution of purple moor-grass/rush pasture has a western bias, with particularly high cover in the south Wales coalfield and locally elsewhere.

Agricultural intensification extends to the coast, and the remaining maritime cliff-top grasslands and heathlands are often confined to a narrow fringe zone. Likewise, the brackish hinterland has been widely lost to agriculture over much of the lower-lying coast and also to industrial and urban spread, especially in south Wales. Sand-dune and saltmarsh habitats have been less taken over for farming, but several dune systems have been heavily modified by conifer plantations, airfields, golf courses and other developments. Despite these pressures, the coastal flora and fauna of Wales is remarkably rich, and this is undoubtedly due in large part to the establishment of a series of nature reserves and other protected sites.

Applications of the survey findings

This survey was a hugely ambitious undertaking, but we needed such detailed information to guide nature conservation programmes. This the survey is now doing. For example, over 1,000 remaining pieces of flower-rich lowland grassland have been the subject of more intensive floristic examination.

The set of 1:10,000 scale habitat maps is now in frequent use to assess the potential impact of new land-use developments in the countryside, as well as to identify locations for concentrated habitat protection. At the all-Wales scale, the habitat cover statistics provide a firm foundation for planning new conservation initiatives, such as priorities for the Tir Gofal agri-environment scheme and targets for Biodiversity Action Plans. Local Authorities have used the habitat maps in landscape assessment under the LANDMAP scheme, to provide a foundation for the biodiversity layer, and the maps are also providing a basis for taking forward the Open Access arrangements under the Countryside and Rights of Way Act, 2000.

The data-set also offers plenty of scope for further analysis and research. It has already been used to assess historical habitat change in the Llŷn Peninsula during the 20th century, in a study which drew attention to substantial declines in heathland and other habitats. It has also been used to assess whether there is an appropriate balance of different habitats represented in Welsh SSSIs, and it has enabled us to examine relationships between habitats and species. In part of north Wales, the maps of fragmented habitats have

been successfully used to predict the distributions of a range of butterfly species, and they have also allowed much better understanding of the amount of wet grassland required for the survival of the threatened marsh fritillary butterfly.

Of special significance is a new project involving analysis of the digitised maps to assess the suitability of particular parcels of land for habitat restoration. The maps reveal the extent of fragments of a particular target habitat which, together with aspects of the physical environment, point the way to choosing suitable sites for habitat reconstruction. Restoration schemes based on this analysis offer the chance to counteract the damaging effects of habitat deterioration and fragmentation. We hope that the lasting attribute of the survey will be as a tool to guide the rehabilitation of Welsh habitats for enhanced wildlife conservation.

Copies of the digitised data are available on CD rom for appropriate bona fide conservation work, and can be obtained from the Natural Science Group at CCW, Bangor. Please contact Jonathan Rothwell on 01248 385668.

Acknowledgements

Many individuals in NCC and CCW have made important contributions to the habitat survey of Wales, not least the survey teams themselves. We owe a particular debt to Dr Malcolm Smith who provided constant encouragement and support. We are also most grateful to the many farmers and other landowners who allowed us to record on their land and who passed on much valuable information.

For help in preparing this short synopsis, we thank especially our colleagues Clare Burrows, David Stevens and Jane Stevens.

Tim Blackstock is Head of CCW's Natural Science Group, and has been responsible for the Habitat Survey since its inception.

Liz Howe, who is the Group's Species Team Leader, headed the Habitat Survey Team from 1991 to 1997.

References

Blackstock, T.H., Stevens, J.P., Howe, E.A. & Stevens, D.P. (1995). *Changes in the extent and fragmentation of heathland and other semi-natural habitats between 1920-22 and 1987-88 in the Llŷn Peninsula, Wales, UK.* Biological Conservation 72, 33-44.

Blackstock, T.H., Stevens, D.P. & Howe, E.A. (1996). *Biological components of Sites of Special Scientific Interest in Wales.* Biodiversity and Conservation 5, 897-920.

Nature Conservancy Council (1990). *Handbook for Phase I Habitat Survey.* Nature Conservancy Council, Peterborough.

Ratcliffe, D.A. & Birks, H.J.B. (1980). *Classification of Upland Vegetation Types in Britain.* Nature Conservancy Council, Peterborough.

Mapiau i'r dyfodol

Mae set o fapiau unigryw yn dangos pa lystyfiant sydd ar bron bob modfedd o ddaear cefn gwlad Cymru. Defnyddiwyd lluniau o'r awyr ac ymweliadau, gydag arolygwyr yn trafod rhwng 100 a 300 hectar bob dydd.

Erbyn diwedd 1997, rhoddwyd sylw i'r rhan fwya' o Gymru a pharatowyd mapiau cynefin, sydd bellach yn ddigidol. Er mai tir pori sydd amlyca', a'r rhan fwya' wedi'i wella'n amaethyddol, mae llecynnau lled-naturiol o safon uchel, gan gynnwys rhai o'r enghreifftiau gorau yng ngwledydd Prydain o weundir uchel, corsydd blanced, coedydd llydanddail, porfeydd calch, a systemau ffen, twyni, clogwyni ac aberoedd. Uwchben y wal fynydd, byddai modd helpu gweundiroedd trwy bori llai a rheoli llosgi. Yn y de dirywiodd llawer o'r mignenni.

O dan y wal fynydd, mae hanner y tir yn borfa wedi'i gwella, collwyd llawer o gynefinoedd lled-naturiol a darniwyd mathau eraill. Er bod y darlun cyffredinol yn dywyll, mae llecynnau pwysig o hyd ac mae'r mapiau'n helpu gyda chadwraeth, trwy nodi mannau gwerthfawr, mesur effaith datblygiadau a chyfeirio polisi. Mae un prosiect newydd o bwys yn asesu darnau o dir o ran adfer cynefinoedd - bydd cynlluniau o'r fath yn rhoi cyfle i wrthweithio'r dirywio a'r darnio.

All photos: Ian Callan.

Creating a wildlife garden at Winllan

More and more people are discovering the pleasures of creating their own private nature reserves. One couple took up the challenge nearly thirty years ago, and now look after a wonderful haven for wildlife. ***Ian Callan*** *recounts the inspiring story of a wildlife garden.*

Southern marsh orchid.

"Why don't you write a book?"

Many visitors to our garden ask me this. My reply is always the same: "I'm a doer not a writer." So this article is a compromise, written when the weather makes it impossible to do anything useful outside.

When we first came to Winllan, nearly thirty years ago, the land was a wonderful wildlife site but frankly it looked a mess. There was a large and very smelly bog below the house into which the effluent from the cowshed had drained for many years. Beyond this was a south-facing slope which was a wilderness of bracken, bramble and gorse. It must have been teeming with wildlife if only one could have penetrated it to have a look. Beyond this was another bog, not quite so smelly, but far from clean as it was fed by drainage off the road. Finally there was a four-acre meadow, which had been continually grazed by a variety of stock, including ponies. For anybody who was fond of docks, thistles and nettles, this was a paradise.

As both my wife and I are botanists, having studied together at Edinburgh University, we wanted to increase the wild flowers by creating several different habitats. What we didn't realise at the time was that, by creating these habitats, we would not only increase the number and variety of flowers but also the whole range of flora and fauna. The 'in' word is now biodiversity but to us then it was just a matter of more insects, birds and small mammals.

The first thing that we set about doing was to create a pond by draining the bog below the house. We were fortunate in having a river which, at normal level, was a good ten feet below the level of the bog and it was therefore only a matter of digging a deep trench between the two. When the water of the bog had drained and the ground was sufficiently firm we brought in a JCB to do the actual excavation, and then for the next few months we carried the excavated soil by wheel-barrow and spread it over the surrounding land. When that had been done we got the local farmer first to disc and then to harrow the area, and finally we sowed it to grass, using a rough lawn mixture containing rye-grass.

Gradually the pond filled, mainly from a small spring which was conveniently located above it – it had probably been the principal source of water for the cottage. Over the next couple of years we introduced native water lilies and pond weeds, and planted up the margins with flag iris, marsh marigolds, purple loosestrife and spearwort, all of which we had found growing in other parts of the land, except for the water lilies which we had acquired from a near-by pond.

There was no way that we could tackle the brambles and gorse which covered the slope beyond the pond. In fact it had taken a couple of hours, wearing protective clothing, to cut a way from the cottage down to the river when we first arrived. We had to employ a bulldozer which scraped off the top three or four inches and this, together with all the trash, was dumped in an enormous pile which we eventually burnt. After this the whole area was completely bare and frankly looked terrible, but within a couple of years it was covered with grasses and wild flowers. Ox-eye daisies were the dominant flowers in the first few years but were quickly followed by violets, primroses, bluebells and plantains. Where the seeds had come from was a mystery, and in fact we asked this question time and time again as more and more flowers appeared.

While all this was going on we changed the management of the main four-acre meadow, which had been badly poached and was full of docks with patches of thistles. We allowed sheep to graze it from September until the end of March, after which the grasses and wildflowers were able to grow. A crop of hay was taken sometime in July depending on the weather. Sheep improve the quality of the sward as they are very efficient grazers and being so much lighter they do not poach the land in the same way as cows or horses. The wonderful thing about haymaking is that the process of turning (tedding) the cut hay in order to dry it is the perfect way of spreading the seed of wildflowers. Because there were so many docks and clumps of nettles we sprayed these with a herbicide using the spot spraying technique to avoid harming adjacent plants.

Our last major project was to create a small wood. We did this where the second bog had been, between the sloping bank and the four-acre meadow. Of course we had to drain the area first and this we did again by digging a ditch down to the river. The ground was very rough and we had to have it rotovated before we could start planting. One of the ideas behind the wood was to show visitors a whole range of mainly native trees and so we brought ten of each of twelve species from a commercial nursery. This was a mistake, as the trade does not like to supply such small quantities, and unfortunately they arrived in rather poor condition and many never established. The gaps which developed we filled with oak, ash, beech and hazel seedlings which we dug up from elsewhere in the garden. Finally, we fenced off the area to prevent sheep getting in and damaging the young trees.

Now we had created five different habitats; a pond, a south-facing, well drained slope with a boggy area below, a hay meadow and a small wood. In addition we had two other habitats which, although we did not actually create them, were equally important and required management. These were the 600 metres of river bank and 800 metres of hedgerows.

As the only outside help that we had was where heavy equipment was needed i.e. digging the pond and bulldozing the slope, it took us nearly five years to get the garden into the shape that it is now. For twenty or so years it has been a question of maintenance, apart, that is, from the sheep in the winter and the routine cutting of the hay in the summer, which are both looked after by the local farmer. It is very difficult to define 'maintenance' apart from the obvious jobs like hedging and ditching, and cutting back bracken and brambles in the winter, but there always seems to be something to do in a garden of this size even if it is only a case of writing up notes.

The development of the flora and fauna has exceeded all our expectations. We now have well over 200 flowering plants. We are particularly pleased with the way in which the orchids have increased in the meadow. When we first took over we found just the odd spike of the heath spotted orchid. Last year we estimated that there were over 1,000 flowers, made up of southern and northern marsh orchids, common and heath spotted orchids and undoubted hybrids. There were also a few greater butterfly orchids. Again we wonder where they have come from. Orchids have a very complicated life history but we like to think that our management has at least contributed to their spectacular success.

It is not just flowering plants that have increased, for in the autumn we get a good variety of fungi, including several quite rare waxcaps. As one would expect, an increase in the flora has led to an increase in the fauna. The numerous insects, the most conspicuous of which are the butterflies and dragon/damselflies, have in turn increased the number and variety of birds. No doubt there has also been an increase in the small mammal population, although we have not attempted to record this.

We did, however, have a family of water voles on our pond last year. These are delightful animals and are becoming rare, though they can create quite a lot of damage, not only by eating the rhizomes of the flag iris but also by making holes in the bank. Sadly we have lost them, possibly due to predation by mink which come up the river and are very partial to water voles.

Making and maintaining this garden has meant a lot of hard work but has given us, and we hope our many visitors, a great deal of pleasure. It will also explain why I have never found time to write a book.

Ian Callan spent most of his working life as a plant pathologist, both in the UK and overseas, but since he retired in 1974 he and his wife have been developing Winllan as a haven for wildlife with an emphasis on wild flowers.

Winllan Wildlife Garden is situated on the B4342 between Talsarn and Llangeitho (SN 567 574), and is open to the public every afternoon in May and June from 2pm to 5pm.

Winllan a roddwyd ...

Mae Ian Callan a'i wraig wedi troi eu tir yn hafan i fyd natur. Drideg mlynedd yn ôl, roedd Winllan yn llanast. Bellach, mae'r ddau fotanegydd wedi gweld fod creu cynefinoedd i flodau yn cynyddu pob math o fywyd gwyllt. Cafodd un gors ei throi'n bwll ar gyfer planhigion dŵr a throwyd llethr o eithin a mieri yn borfa gyfoethog o weiriau a blodau. Mae'n ddirgelwch o ble daeth yr hadau! Newidiwyd y drefn o reoli'r ddôl, gan adael i ddefaid bori yn y gaeaf a chynaeafu ambell gnwd o wair, gan wasgaru hadau'r blodau. Gyda choedwig fechan o goed brodorol, glannau afon a gwrychoedd, mae yna bellach saith gwahanol gynefin gyda mwy na 200 o rywogaethau blodeuog, gan gynnwys sawl math o degeirian.

Edrych yn ôl – er mwyn symud ymlaen?
Yr Adolygiad o Barciau Cenedlaethol Cymru

Llyn Gwynant, Parc Cenedlaethol Eryri. Ffoto: CCGC.

A fydd adolygiad Llywodraeth y Cynulliad o Barciau Cenedlaethol yn ddigon uchelgeisiol, yn ymwneud digon â'u cymunedau, ac yn dod o hyd i ffyrdd sy'n unigryw i Gymru o gydbwyso buddiannau'r rhai y maen nhw'n eu gwasanaethu? Mae ***Geraint George*** *yn mynd ar drywydd hyn.*

Ffoto: CCGC.

Syniad estron

Yn ôl yn 1951 sefydlwyd Parc Cenedlaethol cyntaf Cymru yn Eryri, ac ilynedd bu Arfordir Penfro yn dathlu hanner can mlynedd ers i'r ardal gael ei dynodi yn 1952. Yn 2007 bydd Parc Bannau Brycheiniog hefyd yn cyrraedd yr un garreg filltir. Felly, amserol iawn yw edrych yn ôl ar ein Parciau Cenedlaethol gan bwyso a mesur llwyddiannau, methiannau a gwendidau'r system a gafodd ei sefydlu i ddiogelu ardaloedd mwyaf godidog Cymru – a gobeithio, trwy wneud hynny, datblygu gweledigaeth newydd ar gyfer y dyfodol. Dyma'r meddylfryd, mae'n debyg, sydd y tu ôl i'r Adolygiad o'r Parciau Cenedlaethol yng Nghymru y mae Llywodraeth y Cynulliad yn ei wneud ar hyn o bryd. Beth, tybed, yw natur yr adolygiad a pha mor uchelgeisiol, gwreiddiol neu radical fydd y canlyniadau?

Syniad o UDA yw Parciau Cenedlaethol. Sefydlwyd yr un cyntaf, Parc Yellowstone, yn ôl yn 1872, a dilynodd Canada a nifer o wledydd De America ac Affrica yn fuan wedyn. Sweden oedd y wlad gyntaf yn Ewrop i ddilyn y drefn. Cymerodd tan ail hanner yr ugeinfed ganrif, wedi blynyddoedd lawer o bwyso gan y sector gwirfoddol, cyn i lywodraeth Lloegr symud o ddifrif. Bu Adroddiad Dower ac Ymholiad Hobhouse ychydig wedi'r rhyfel yn allweddol gan iddynt glustnodi'r ardaloedd hynny a ddewiswyd fel Parciau yn Lloegr a Chymru. Yna cafwyd Deddf y Parciau

Cenedlaethol a Mynediad i Gefn Gwlad yn 1949 sy'n sail i'r hyn sydd gennym heddiw – Parciau Cenedlaethol mewn enw, ond rhai tra gwahanol i'r rheini a sefydlwyd yn America a mannau eraill o'r byd.

Yn wreiddiol, pwyllgorau o'r Cynghorau Sir yn yr ardaloedd perthnasol oedd yn gweinyddu'r parciau gyda phwyslais ar faterion cynllunio. Erbyn hyn, yn dilyn Deddf yr Amgylchedd (1995), maent yn Awdurdodau Lleol Annibynnol gyda dau brif bwrpas statudol, sef:

- gwarchod a hybu prydferthwch naturiol, bywyd gwyllt a diwylliant
- creu cyfleoedd ar gyfer dealltwriaeth a mwynhad o'r ardaloedd gan y cyhoedd

Hefyd, ers 1995, mae disgwyl i'r parciau roi ystyriaeth i'r economi ac i gymunedau lleol wrth iddynt gyflawni'r prif ddyletswyddau uchod.

Mae'r elfen olaf yma yn gryn sialens. Bu nifer o achosion ymhob un o'r parciau yng Nghymru yn ddiweddar lle mae gwrthdaro amlwg rhwng cadwraeth, buddiannau pobl leol a chreu cyfleusterau ar gyfer ymwelwyr. Gwaith anodd y Parciau yw ceisio darganfod cydbwysedd rhwng yr elfennau uchod, gan rhoi ystyriaeth lawn a theg i ffactorau lleol a rhai cenedlaethol – tasg bur amhosib ar adegau!

Gellir dadlau mai syniad estron o'r cychwyn yw'r Parciau Cenedlaethol a ddaeth i Gymru yn anuniongyrchol o America trwy gyfrwng Deddfwriaeth Lloegr. Ni sefydlwyd Parciau Cenedlaethol yn yr Alban, a dim ond yn ddiweddar, yn 2002 wedi datganoli, y bwriodd Llywodraeth yr Alban ymlaen i greu Parc Cenedlaethol cyntaf y wlad yn Loch Lommond a'r Trossachs. Mae un arall i ddod ym mynyddoedd y Cairngorm. Ond bydd gan Barciau'r Alban systemau gwahanol iawn o safbwynt eu rheolaeth a'u rôl mewn datblygiad economaidd a ffyniant y gymuned leol.

Dylem gadw llygad barcud ar y datblygiadau cyffrous yma yn yr Alban wrth i ni yng Nghymru gael llais a chyfle, drwy'r Adolygiad, i gynnig ffyrdd newydd o weithio er lles ein cymunedau gwledig a datblygiad economaidd cynaliadwy yn ogystal a chadwraeth o'r dirwedd, cynefinoedd â rhoi mwynhad i ymwelwyr.

Adolygu beth?

Felly, beth yn union yw natur yr Adolygiad? Mae'r broses wedi cychwyn eisioes. Apwyntiwyd Grŵp Llywio gan Lywodraeth y Cynulliad ac mae ymgynghorwyr annibynnol yn gyfrifol am gasglu gwybodaeth a barn er mwyn paratoi adroddiad terfynol erbyn Gorffennaf 2003. Prif amcanion yr Adolygiad fydd:

1 Asesu rôl bresennol y Parciau – h.y. pa mor llwyddianus ydynt wrth gyflawni'r ddwy brif ddyletswydd statudol, a hefyd pa mor effeithiol, ydynt o safbwynt datblygiad cymunedol ac economaidd o dan y ddeddfwriaeth bresennol.
2 Ystyried sut y gall y Parciau hybu a chyflawni datblygiad cynaliadwy.
3 Ystyried sut y gall Awdurdodau'r Parciau ymestyn allan at y cymunedau o amgylch y parciau.
4 Ymchwilio sut y gall Awdurdodau'r Parciau ymgynghori, cyfathrebu a chyd-weithio'n well gyda'r gymuned leol.

Ar un olwg mae'r amcanion uchod i'w croesawu'n fawr. Maent o leiaf yn ceisio targedu'r prif broblemau sydd wedi bod yn achos pryder i lawer, yn enwedig trigolion lleol, ers pan sefydlwyd y Parciau. Ar y llaw arall, credaf fod yn rhaid gofyn nifer o gwestiynau sy'n allweddol i lwyddiant a hygrededd yr Adolygiad, cwestiynau fel:

Sut y gall yr ymgynghoriad gyrraedd y bobl?

Cymharol hawdd yw cael barn y prif asiantaethau, awdurdodau a mudiadau gwirfoddol sydd â diddordeb naturiol yn nyfodol y Parciau ac sydd â barn bendant neu bolisi yn barod. Anos, a phwysicach o lawer, fydd cael gwybod beth yw teimladau trigolion y parciau a'r ardaloedd o'u hamgylch ynghyd â barn y miliynau sy'n ymweld â'r Parciau'n flynyddol. Go brin y bydd ambell gyfarfod cyhoeddus ym Meddgelert, Tŷ Ddewi neu Aberhonddu yn medru cyflawni hyn!

Ydy'r ymgynghoriad yn ddigon uchelgeisiol?

Er mor glodwiw yw prif amcanion yr Adolygiad, gellid bod wedi bod yn llawer mwy uchelgeisiol a mentrus. Ers datganoli mae gennym gyfle i edrych ar faterion cyfoes fel hyn o safbwynt Cymraeg a Chymreig. Dylid adolygu nid yn unig ddyfodol ein Parciau Cenedlaethol, ond hefyd ailedrych ar ein holl systemau cadwraethol ynghyd â dynodi tir o safbwynt tirwedd a chynefinoedd. Dylid rhoi ystyriaeth lawn i faterion sy'n allweddol i'n Parciau Cenedlaethol megis ffyniant economaidd, datblygiad cynaliadwy, trafnidiaeth, twristiaeth, egni, tai gwledig, ddyfodol amaethyddiaeth, patrymau mudo gwledig, datblygiad cymunedol, diwylliant, a hefyd yr iaith Gymraeg.

Mae Adolygiad o'r Parciau Cenedlaethol yn Lloegr eisioes wedi digwydd. Cyhoeddwyd y canlyniadau yn 2002 gan DEFRA. Mae dros ddeugain o argymhellion yn ymwneud â pholisi, rheoli ac ariannu. Y rhai mwyaf diddorol yw:

- bod y system bresennol yn gweithio ar y cyfan – nid oes angen newid chwyldroadol
- y dylid rhoi mwy o bwyslais ar rôl y Parciau mewn datblygiad economaidd cynaliadwy
- y dylid cadw pwerau cynllunio presennol y Parciau
- dylid newid y system o reoli, gyda mwy o Aelodau Awdurdodau'r Parciau yn cynrychioli'r diddordebau cenedlaethol ond eto yn cadw'r mwyafrif yn Aelodau lleol
- dylid ariannu'r Parciau yn gyfan gwbl o Lywodraeth Ganolog.

Yr ateb i Gymru?

Er bod canlyniadau'r Adolygiad yn Lloegr yn sicr o ddiddordeb mawr i ni yng Nghymru, gobeithiaf y byddwn yn ddigon hyderus i greu Adolygiad perthnasol i Gymru yn unig a fydd yn codi cwestiynau am Gymru ac yn canfod atebion i Gymru. Mae'r casgliadau yn Lloegr yn mynnu nad oes angen newid chwyldroadol – ai dyma fydd yr ymateb yng Nghymru? Neu a fyddwn yn ddigon dewr a mentrus i gynnig model newydd, anturus a gwreiddiol ar gyfer ein Parciau Cenedlaethol ni?

Mae'n debyg mai byw mewn gobaith y byddaf gan fod yn rhaid cydnabod nad oes gan ein Cynulliad Cenedlaethol yr awdurdod i newid llawer ar y polisïau a'r systemau cynllunio a chadwraeth. Rhaid i'r Cynulliad (neu Senedd y dyfodol?) gael pwerau deddfwriaethol llawn os ydym am ddatblygu polisïau newydd, uchelgeisiol a chyffrous er mwyn arwain y ffordd ym myd cadwraeth a datblygiad cynaliadwy a thrwy hynny geisio sicrhau dyfodol i'n pobl ifanc yn Eryri, Penfro, Y Bannau ac yng nghefn gwlad Cymru'n gyffredinol.

Mae **Geraint George** yn Gyfarwyddwr Rheolaeth Cefn Gwlad yn Ysgol Busnes a Datblygiad Rhanbarthol Prifysgol Cymru Bangor. Mae hefyd yn Aelod o Awdurdod Parc Cenedlaethol Eryri. Barn bersonol yr awdur yw cynnwys yr erthygl hon.

A look back – to move forward?

Geraint George provides an overview of the on-going Review of the National Parks in Wales initiated by the Welsh Assembly Government: the views expressed are his own.

The Review aims to focus on four key issues which are to:

- assess the overall role of the Parks in undertaking their two main statutory duties
- consider how to maximise the Parks' contribution to sustainable development
- consider how the Parks could reach out to communities beyond their boundaries
- examine what steps the Park Authorities could take to engage more effectively with their local communities.

Although these may be welcome and worthy objectives the author raises important questions regarding the consultation process. Only a fully empowered Welsh Assembly or Senedd can make the necessary changes in planning, sustainable rural development, governance, landscape protection and conservation policy. These will ensure a vibrant future for young people and their communities in the Welsh National Parks, and indeed the whole of the Welsh countryside.

Pembrokeshire's **living heathlands**

All photos: Andrew Tuddenham.

Starting a controlled burn on coastal slopes near Solva.

Heathlands are a fragile habitat, shaped by human activities and easily destroyed by them. Gweundir Byw Sir Benfro – Pembrokeshire's Living Heathlands is a project which is bringing new life to the special heaths of this far corner of Wales, as ***Andrew Tuddenham*** *reports.*

Bell heather

Lowland heathland can be many things to many people. The textbook definition is that a heath will be dominated by vegetation consisting of ericaceous shrubs, especially common heather or ling. From the Llŷn peninsula to the cliffs and islands of Pembrokeshire, the ling and spring squill-covered coastal heathlands of Wales certainly fit this bill. The wet heaths of west Wales on the other hand do not at first seem to be heaths at all. The heathers, usually bell heather and cross-leaved heath, are more typically scattered, and sometimes virtually non-existent. So perhaps it is more useful to think of our lowland heathland as a cultural landscape that has been shaped by centuries of traditional grazing, cutting and burning. And in Pembrokeshire this can mean a landscape that contains a tremendous blend of vegetation types amongst the heathers, including maritime grassland, marshy grassland, bracken, species-poor fen and scrub.

From the coastal headlands of St David's to the inland wet commons of mid-Pembrokeshire, these heaths are the subject of a major programme of conservation work called 'Gweundir Byw Sir Benfro – Pembrokeshire's Living Heathlands'. Its aim is to restore some of the county's most important heathlands to prime condition. The sites involved in the project are steeped in history and are home to some of Britain's scarcest and most beautiful wildlife.

The story of lowland heathland in the British Isles is by now a familiar one. It goes like this: despite a somewhat wild and natural appearance, most heathland has arisen through human action. Around 5,000 years ago people began cutting down trees and clearing the land for agriculture. Their low-key farming methods, with repeated cycles of grazing and burning, allowed Ice Age plants to reclaim the clearings and in some places create large tracts of lowland heathland. After a few thousand years of harmonious existence between farming and nature, the tide well and truly turned, such that by the end of the 20th century much of the land covered by heath had been lost to intensive farmland or urban development. Within 200 years, more than 80% had gone.

Volunteers clearing a fire-break on the slopes of Carn Llidi.

It's not so clear what was happening in Pembrokeshire during that time, but given some documented losses and clues from place names, it is probable that heathland was once more widespread. What is certain is that within living memory the once traditionally managed commons and other remaining pieces of heathland have been mostly abandoned. Much of the 2,500 hectares of this ancient habitat is now considered to be in poor condition and reverting to scrub. In the absence of regular grazing, the inland heaths have become rank and uniform, often covered by a blanket of purple moor grass, European gorse or willow scrub. Condemned by neglect, the heaths and their specialised plants and animals are fading out altogether

Grazing

Most of the heaths need grazing by heavy stock – horses and cattle. Welsh Mountain ponies have been grazing a number of National Trust heathlands since the early 1990s, and are well adapted to the rough terrain and semi-natural forage found on these sites. The animals are hardy and agile, are not prone to foot rot, and do not naturally approach the public. Farm horses used to graze the west Wales heaths throughout the year, working on the farm as necessary. This probably resulted in a peak in heathland grazing during May-June as farm work eased off, coinciding with the peak in the purple moor grass' growth rate and nutritional value. Grazing with cattle takes place on a handful of project sites, and the project has a herd of Welsh Black beef bullocks that are moved around various National Trust commons and coastal heathlands.

from the West Wales countryside in a depressingly familiar scene that is being played out across many other lowland areas. Curlew, snipe and lapwing, ground-nesting birds that depend upon sparse, short swards, are now absent as breeding birds on the north Pembrokeshire commons. What's more, diminutive plants such as the pale butterwort and the yellow centaury that need the muddy openings created by cattle or horses have vanished from most of their former sites.

But of course this is not the final chapter in the story of heathland in Pembrokeshire.

In 1997 the Pembrokeshire Heathland Partnership, led by the Countryside Council for Wales, submitted a project bid to the Heritage Lottery Fund, to expand and intensify a programme of heathland cutting, burning, and grazing across a suite of 34 sites. The National Trust, which for some 15 years had been making strides towards restoring its 20% share of the habitat using these methods, would lead the project. Work finally got underway in 1999 as part of the UK-wide 'Tomorrow's Heathland Heritage' programme.

Since then the cash budget of £380,000 has been put to good use to purchase a range of grazing-related equipment (cattle trailer, water bowser, mobile stock handling pen) and to install water troughs and some 12km of boundary stock fences around several National Trust properties. Grazing with a combination

Years of grazing, burning and cutting have recovered a heathland that is easier and more productive to graze.

of licenced graziers' stock and NT's own herd of Welsh Mountain ponies and Welsh Black cattle has been expanded onto an additional 60ha of derelict heathland, and existing grazing regimes have been enhanced on 120ha. What's more, over 1,000 worker days have been chalked up by partnership volunteers who have thinned out willow and gorse scrub and helped to burn patches of uniform heath and purple moor grass.

Most of the project sites are pieces of common land – some owned by the National Trust and some of undetermined ownership and legally protected by the County Council. By installing the necessary infrastructure and carrying out some of the difficult initial grazing, cutting and burning, these commons should be in a much better position to be maintained by commoners' stock. Rare species that stand to benefit from management work include chough, southern damselfly and three-lobed water crowfoot, of which Pembrokeshire holds some of the last populations in the UK.

Lying in a shallow clay basin to the south of the imposing rocky outcrops of Carn Llidi, Carnedd Leithyr and Pen Beri, the St David's Airfield heaths SSSI is a case in point. The heaths, a collection of small

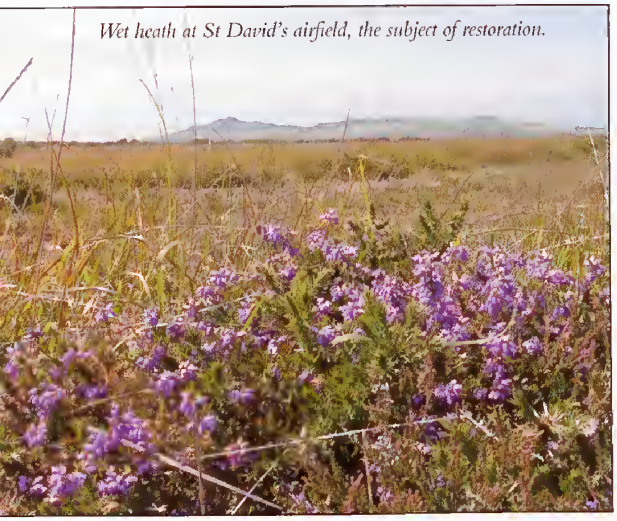
Cutting

Heath cutting is being undertaken in the project to create stock paths to allow livestock to roam freely and reach the densely overgrown areas, and to create temporary and permanent firebreaks that arrest or slow the spread of uncontrolled fires and provide greater control over managed burns. Carefully designed firebreaks help to direct the trampling hooves of the roaming livestock, funnelling the stock through naturally wet spots to maintain the sparsely vegetated muddy patches that are home to scarce plants like the yellow centaury and allseed. Where possible, graded edges are being maintained by varying the cut height and frequency.

Target areas within the coastal project sites are typically dominated by European gorse, and usually this has to be cut by hand. The rough and rocky terrain is just too hazardous for mechanical work, and the risk of damage to archaeological and geological features can be another limiting factor. Teams of volunteers are involved in the annual task of hand clearance, which takes place mainly between September and November before the onset of the harshest winter storms. The cut material is either burnt in situ or scattered within plots (up to 0.5ha in size) that are then burnt later in the winter. St David's Head has been the focus of much of this work. Where the European gorse has been well established, just burning a plot isn't enough – the charred stems need to be cleared away to fully expose the land to livestock. And once the gorse has been cleared back, the grazing needs to be maintained to work through the flush of coarse grasses that thrive on nitrogen-enriched soils that the gorse has left behind.

commons which are mostly owned by the National Trust, join together to form a 2km long band of swamp, fen, rhos pasture and oceanic wet and dry heath that curls around the northern edge of the disused airfield near St David's. These sites, and a string of similar wet commons in the area, sit within a web of heathland around the St David's peninsula that is surprisingly rich in flowering plants – more than 300 species have been recorded.

From bog asphodel, ling and western gorse to lesser butterfly orchid, wavy leaved St John's Wort and pillwort, these are the plants that, for a few months of the year, bring the commons to life. Grasshopper warblers and whitethroats are among the many different songbirds that enrich the show in the summer, and snipe, short-eared owls and hen harriers provide added drama in the winter.



Wet heath at St David's airfield, the subject of restoration.

For the past 12 years, restoration grazing with ponies and cattle has been undertaken by the National Trust at various times of the year, some of the commons remaining relatively dry in the early part of winter. A network of firebreaks had been cut and maintained on the largest of the heaths, Waun Fachelich, using a tractor-mounted flail, and several plots of rank marshy grassland and wet heath had been burnt in the winter. More recently, since the start of the project the heaths have been sectioned off from the adjacent semi-improved grassland areas to concentrate the summer grazing within the heathland areas. Strips of uniform heath have also been cut and the material removed using a flail mower-collector as an alternative to burning; as part of a pillwort restoration project funded by CCW and the National Trust, a number of small scrapes have been created by machine. All this work is not just good news for wildlife. Years of restoration grazing, burning and cutting have recovered a heathland that is now easier and more productive to graze, and last summer most of the grazing was taken on by a local beef farmer, freeing up the Trust's stock for other sites.

Although the Pembrokeshire's Living Heathlands project is now more than half way through its HLF funding period, it is still early days – the results of restoration will become more apparent over the next 10-15 years. A few glimpses of success have already emerged on a number of sites, with heather seedlings appearing on dry ground previously covered by gorse and, amazingly, sightings of silver-studded blue butterflies at Stackpole Warren in an area that had been reclaimed from gorse scrub the previous winter. Yellow centaury has also reappeared on Waun Fachelich within stands that were opened up using the tractor mounted flail mower-collector. These results are going some way towards Pembrokeshire's Local Biodiversity Action Plan (LBAP) target, whereby all 2,500ha of the habitat is maintained, complete with a typical suite of plant species, and where most (80%) of this holds a good cover of dwarf shrubs of varied ages.

A small amount of heathland re-creation is being investigated as part of the project at Stackpole Head in an effort to return some of the coastal calcareous heathland that was replaced by pasture after the war. Outside the project, the Pembrokeshire Coast National Park Authority and partners are making notable strides towards the LBAP re-creation target of 200ha. In two separate ventures, some 2-3ha of translocated wet heathland has been established at the St David's airfield and work is currently underway to return 50-60ha of lowland heathland at Penlan, a conifer plantation on the edge of the Preseli hills.

Burning
Suitable weather conditions for heath burning within the legal window of opportunity (November-March) typically arrive in December to January. Cold, dry weather, ideally with frosts, insulates the ground and its dormant plants and insects from the heat of the fire. Burning is carried out using temporary firebreaks to enclose a patch of up to 0.5ha in area. The downwind edges are burnt first, and then the upwind side is lit to allow the fire to spread rapidly down to the previously burnt line. Burning on the inland wet commons can promote the rapid growth of purple moor grass – this response was well known to previous generations, who set fire to the commons to promote good grazing in the coming summer. Follow-up grazing has been critical to ensure that the moor grass is kept in check and other plants are able to flourish again.

Working in partnership, that often mocked phrase of modern times, has been vital to the project. The National Park Authority and the County Council have substantially improved access onto numerous project sites, and some of the coastal habitat works have been match-funded by the RSPB. The involvement of local farmers and the holders of commons grazing rights is essential if the benefits are to be long lasting.

A steady stream of guided walks, talks and press releases has supported all this practical work, reaching nearly 800 people since 1999. Thankfully the involvement of local communities and registered commoners has mainly been on positive terms – this is an agricultural county after all, and the case for grazing the heathlands is generally understood.

The Pembrokeshire Heathland Partnership consists of The National Trust, Countryside Council for Wales, Pembrokeshire Coast National Park Authority, Royal Society for the Protection of Birds, Pembrokeshire County Council and the Wildlife Trust West Wales. The project web site is **www.rhos.org.uk**. Similar projects are underway elsewhere in the UK, from Norfolk to Cornwall to the Gower peninsula. The Tomorrow's Heathland Heritage web site is at **www.english-nature.org.uk/thh**

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gpmajt@smtp.ntrust.org.uk

Welsh mountain ponies grazing wet heath near Fishguard.

Gwella'r gweunydd

Mae partneriaeth o gyrff a mudiadau hanner ffordd trwy gynllun i adfer gweundiroedd llawr gwlad yn Sir Benfro. Mae'n dirwedd sy'n gyforiog o wahanol fathau o lystyfiant ond, fel yng ngweddill Cymru, roedd Sir Benfro wedi colli llawer o'r gweundiroedd hyn oherwydd ffermio dwys a datblygu.

Yn 1997 y gwnaeth Partneriaeth Gweundiroedd Sir Benfro gais am arian o Gronfa Treftadaeth y Loteri ac mae'r £380,000 wedi cael ei ddefnyddio i geisio adfer y gweundiroedd, dan arweiniad yr Ymddiriedolaeth Genedlaethol.

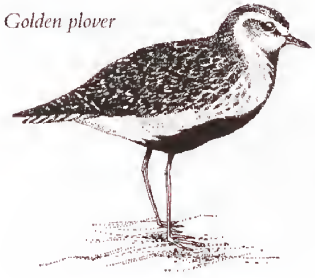
Mae cyfuniad o ddulliau rheoli wedi eu defnyddio'n ofalus, gan gynnwys pori gan wartheg duon a merlod mynydd, torri a llosgi. Yn ogystal â rhoi cyfle gwell i fywyd gwyllt – fel y frân goesgoch neu grafanc trillob y dŵr sydd â rhai o'i gadarnleoedd ola' yn Sir Benfro – mae'n gwella'r borfa i ffermwyr. Er mai ymhen 10 neu 15 mlynedd y daw'r prif fudd yn amlwg, mae nifer o lwyddiannau eisoes i'w gweld: egin grug ar dir sych lle'r oedd eithin gloÿnnod y glesyn serennog ar dwyni'r Stagbwll canri felen eiddil ar Waun Fachelich. Mae'r gwaith yn gyfraniad at gyrraedd targedi Cynllun Gweithredu Bioamrywiaeth Lleol Sir Benfro a chafwyd cyfres o droeon, sgyrsiau a datganiadau i'r wasg i'w gefnogi.

Golden plover *and 'plover-page'*

Golden plover.

Photo: © RSPB.

The moors and blanket bogs of the Welsh uplands provide the special conditions which enable two scarce wading birds to breed. Numbers of golden plover and dunlin have been declining for many years, but all is not lost, as ***Reg Thorpe*** *reports.*



Golden plover

For those of us who enjoy walking through the more remote areas of the bogs and moorland of upland Wales, the plaintive call of the golden plover, given by an alert adult standing on a small hillock a few yards ahead, encapsulates all the wildness and isolation of these areas. As it runs ahead of you, disappearing behind mounds before reappearing and calling once again, it brings a dash of golden colour to the previously bare and relatively bird-less landscape. Dunlin are much harder to find, being less of the exhibitionist than golden plover. You are most likely to hear their rasping songs around dawn, and when you do locate one it is often approachable, walking slowly away from you on the edge of a pool and seldom flying far.

The breeding populations of golden plover and dunlin are almost at the southern limit of their range within the UK, and have declined in both numbers and distribution in Wales over recent decades. They are often found in close proximity to each other in their moorland habitats, with the highest densities in Wales being between 450m and 600m. Golden plover prefers the shorter vegetation of the drier ridges and dunlin the wetter flushes and hollows within an extensive mosaic of blanket bog, peat hags and purple moor-grass moorlands. Just how closely these two species can exist together has intrigued ornithologists. In some areas they appear to coexist so closely that an old local name for the dunlin is 'plover-page', so called because of "its curious habit of flying in company with golden plover,

as though waiting upon it." In Iceland this is taken even further with the local name meaning 'plovers-slave'. The benefits of this association still remain obscure, but it has been suggested that in fact the dunlin is not the 'plovers-page' at all, but almost a parasite, using the wariness and height of the plover to enable it to concentrate more on feeding and leave the detection of threats to the plovers.

Finding golden plover and dunlin on their breeding grounds has become increasingly difficult. At the start of the last century the golden plover inhabited many of the hills in Snowdonia and was considered quite numerous on the northern hills of Breconshire. Going even further back in time it was reported breeding south of here in the second half of the 19th century. It is always difficult to establish when declines of species begin, but it was well underway by the 1940s, if not earlier. Upland surveys between 1975 and 1978 produced counts of 213-224 pairs in thirteen areas, with an estimate of the Welsh population at this time being 250-300 pairs.

Of these thirteen areas only Mynydd Hiraethog, the Migneint, Llanbrynmair, the Elenydd and Berwyns held double-figures with the strongholds being the Elenydd and Hiraethog. Long gone were the days when this species was considered numerous or widespread in suitable habitat.

Although there has not been a further survey to compare with the work undertaken in the 1970s, the most recent surveys of the five best areas at that time have shown declines.

	1975-1978	Most recent (1990s)
Hiraethog	46	7-8
Migneint	18	10
Llanbrynmair	25-35	0
Elenydd	74	44
Berwyn	20+	10

There have probably always been fewer dunlin breeding in Wales than golden plover, but the decline in numbers and contraction in range has mirrored that species. Even though it is almost exclusively an upland breeder, they have been known to nest at sea level, most recently at Morfa Madryn on the north coast.

The remaining main breeding area is the golden plover stronghold of the Elenydd. Obtaining an estimate of the breeding population is difficult as the numbers breeding appear to fluctuate depending on the wetness of the breeding sites and, as with golden plover, the very remoteness of the areas they inhabit. The most recent estimate from the Elenydd was 44 pairs in 1995. The only other recent reports of breeding dunlin come from Hiraethog, the Migneint, Berwyn, Llanbrynmair, Rhinogau and Mynydd Llangynider/ Mynydd Llangattock, but only the Elenydd has held more than single-figures.

Berwyn mountain range. Inset, golden plover.

Main photo: RSPB, inset: CCW.

Plynlimon.

Photo: Michael D. Smith.

Why have these two species decreased or disappeared in many of their remote haunts? Overgrazing is often cited as a principal cause of the decline in upland birds, but this is unlikely for these two species. In fact, in the case of golden plover, the creation or maintenance of short swards would be beneficial and reductions in grazing, allowing the vegetation height to increase, could be detrimental.

One of the obvious contributing factors to the golden plover decline was the conifer plantings on the Llanbrynmair breeding grounds in the 1980s, which resulted in the area no longer being suitable for this species. Conifer plantations around many of the areas are likely to have indirectly affected breeding numbers by increasing the numbers of potential predators and decreasing the distances they would have to travel to access the breeding sites of the two species. In combination with this, a decrease in the number of gamekeepers active in Wales will again have contributed to the number of potential predators.

Photo: CCW.

Dunlin.

In studies in England, increased people-pressure has been linked to declines in numbers of golden plover, but although this may cause relocation of some pairs, away from busy footpaths, there is no evidence that it has affected overall population size. Dunlin, compared to golden plover, do not seem to be concerned by disturbance by humans. Another change, again potentially mainly affecting golden plover, has been the reduction in grouse moor management by burning. This practice will have produced short vegetation amongst tall heather, which would have been beneficial to the species. Any drying out of breeding sites, such as blanket bogs, either directly through drainage or indirectly through climate change, will have been detrimental.

Although the populations of these species have declined, they are probably not yet at a critical level. This means that we should be able to take action to ensure that they remain as breeding species in Wales. The first thing that must be undertaken is a survey to establish the current populations and their distribution. Secondly we need to develop species management plans, integrated into the existing site management plans, to ensure that appropriate management is undertaken. Fortunately, the strongholds for both species are SSSIs, which should provide a mechanism to carry out the required work. In the case of golden plover, its new status as a principal biodiversity species in Wales should provide the impetus.

In the longer term we need to increase numbers and allow them to return to former haunts. For example, a proposal to remove conifers and restore a thousand acres of moorland at Llanbrynmair has long been on the drawing-board. Given the will and the funds, bold landscape-scale restoration projects like this could make a significant difference to the future of these two symbols of the wild spirit of Wales.

Reg Thorpe is the Species and Habitats Officer for RSPB (Cymru) based in Bangor.

Rhag colli'r cwtiaid aur

Er bod niferoedd y cwtiad aur (a adnabyddir weithiau fel y cornicyll aur) a niferoedd pibydd y mawn yn dirywio, mae gobaith eto yng ngwlyptiroedd uchel Cymru, hoff gynefin y ddau aderyn.

Mae arolygon yn y pum safle gorau yn y 1970au yn awgrymu bod niferoedd y cwtiaid sy'n magu wedi lleihau 60% a mwy erbyn y 90au, gan ddiflannu'n llwyr o ardal Llanbrynmair. Tebyg oedd hanes y pibyddion. Er bod gor-bori, yn aml, yn cael y bai, 'dyw hynny ddim yn wir y tro yma. Ond mae coedwigoedd bythwyrdd wedi effeithio ar gynefinoedd ac, ynghyd â llai o giperiaid, wedi cryfhau gelynion yr adar. Mae llai o reolaeth ar weundiroedd trwy losgi grug wedi effeithio'n ddrwg ar y cwtiaid, a sychu cynefinoedd hefyd wedi amharu.

Y cam cynta' ar gyfer eu cryfhau fyddai arolwg trylwyr. Yna rhaid cael cynlluniau rheoli. Gydag ewyllys ac arian, gallai cynlluniau mentrus i adfer cynefinoedd weddnewid dyfodol y ddau.

Dunlin.

Restoring Anglesey's wetlands

Bittern

Will bittern return to breed at Malltraeth marshes?

Main photo: CCW. Inset: RSPB.

Anglesey is an island richly endowed with natural wetlands. Many of these have been drained in recent times in the quest for agricultural productivity, or have succumbed to other pressures. The tide is now turning, and work is underway to restore some of Anglesey's wetlands. ***Alastair Moralee*** *tells the story so far …*

Photo: RSPB

Southern damselfly

What we've got …

The wetlands of Anglesey are one of the island's most important natural features. The suite of lakes, reedbeds, rich fens, basin mires and wet pastures are studded like jewels across the agricultural landscape. This abundance of rich, shallow lakes and fringing reedbeds compares well with any other area in the UK and supports the greatest concentration of breeding wildfowl in Wales. The lime-rich fens support many species and communities which are rare or absent elsewhere in Wales.

Reedbeds, mesotrophic lakes, fens, purple moor-grass and rush pasture are key habitats in the government's biodiversity commitments under the Convention on Biological Diversity, for which Habitat Action Plans have been prepared. Anglesey holds important examples of all these wetland habitats. Similar Species Action Plans for otters, water vole, great crested newt, marsh fritillary, southern damselfly, medicinal leech and many others are relevant to Anglesey.

From the rare bittern to the common but beautiful iris; from the extensive sweep of Llyn Traffwll to the intimate detail of a dragonfly hunting over an ephemeral pool; wetlands in all their variety contribute immeasurably to what it means to live on Anglesey. They characterise and define the island just as the rugged coastline and rolling landscape do and to lose more than we have already would leave us all impoverished.

… and what we've lost …

Yet much has gone; and more slips by un-noticed each year. Indeed, it is difficult to find a wetland on Anglesey that has not been damaged. Drainage, neglect and eutrophication, where phosphate and other nutrients get into the water, stimulating unchecked plant growth and depleting the oxygen on which animal life depends, have all taken their toll.

Surveys in the 1990s revealed that the area of reedbed on Anglesey had reduced by a quarter in the previous 10 years. The remaining areas were small (the majority under 2ha) and fragmented. Lakes, such as Llyn Hendref near Gwalchmai, had been much reduced by drainage (from an area of 14ha in 1971 to less than 4ha by 1990) or, like Llyn Penrhyn, had become so over enriched with nutrients as to rival the worst of the notorious Norfolk broads.

Bittern last bred on Anglesey in the mid-80s, lapwing, once ubiquitous across the Anglesey landscape, are now cloistered in a handful of pastures – perhaps acting out their last stand as we watch. The evocative call of the curlew is fast turning from plaintive to nostalgic …

… and hope …

The plight of the Anglesey wetlands is not unique – nearly half of the UK's reedbeds have been lost since the end of World War II. Habitat restoration and re-creation are not the only answer but they have a significant part to play.

In 1993 none of the problems were new but in one of those serendipitous times, and with the invaluable and very practical help of Bryan Jones from the Environment Agency (EA) and John Ratcliffe from CCW, the RSPB was encouraged and supported to take the first step in turning back some of the tide of loss.

The Society had long been interested in purchasing land on the marsh at Malltraeth to create a large wetland reserve with extensive reedbeds, freshwater ditches, open water and wet meadows. With topographical information from EA and a hydrological survey provided by CCW, we had the time and the place, the will, and some of the know-how.

Funds both for capital works and purchase came initially from the RSPB itself and grant aid from CCW and EA. Subsequently Malltraeth, and our Valley Wetlands reserve, joined the EU Bittern Life Project and in 2000 the Heritage Lottery Fund *Wetlands for Wales* project was officially launched – providing 75% funding for capital and revenue works related to wetland restoration across a number of sites in north and mid-Wales.

Photo: RSPB.

Curlew.

The initial habitat targets at Malltraeth were set in line with the topographical survey, with reedbed planned for land below the 2m contour (around 50% of the area). One of the major constraints at Malltraeth has always been the need to manage our requirements for elevated water levels within a drained marsh system without flooding out our neighbours. This has meant setting our wetland within raised banks, keyed into the underlying substrate and giving us control of water levels.

The winter of 1994/5 saw the completion of the first major section of earth bank and shallow flooding across some 50 ha. As a warden this is what you dream of – making the plans, buying the land and creating new habitat.

In all, around 4km of low earth bank have been created together with around 2km of new ditches, and some 300,000 reed seedlings have been planted. The reserve at Malltraeth has now grown from the initial 70 ha to some 250ha and we are approaching the magical time when we will be able to manage a hydrologically discreet block as a complete system. The reedbed target is for 100ha – and we are well along the path to creating a substantial new wetland – but it will need time.

Meanwhile, different problems were facing our reserve at Valley Wetlands. Here the existing reedbed around the suite of lakes was drying out and filling up with scrub. Apart from the lakes themselves there was little open water, no ditches within the reedbed and a frighteningly high loading of nutrients in the water.

Photo CCW

Coot.

Much, though, can be done with determination and everyone pulling together. The RAF installed a phosphate stripping plant (the first in Wales) on the sewage works which discharges into Llyn Penrhyn; excavators provided new channels through the reedbeds; and local volunteers have cut, raked and cleared hectares of derelict reed.

At Plas Bog, a painfully dry reedbed full of scrub was cleared, re-flooded and now holds water and wildfowl, fish and wintering bittern. Elsewhere reed seedlings have been planted, scrub removed, sluices installed and this winter has so far seen the highest number of bittern sightings in the past 10 years.

Though much has been achieved at these two sites at a pace few, including me, would have predicted, there remains much to resolve and many problems. Planting reed is easy (although not on the back!) but what of those coot that delight in nibbling off the fresh shoots, or the wintering geese at Llyn Traffwll? The phosphate stripping plant at Llyn Penrhyn works well, but will it be enough in itself to reduce the phosophate loadings? It's easy enough, with money and engineers, to flood land, but flooded land is not a wetland ecosystem. Have we got suitable conditions for healthy fish and invertebrate populations? After all, the essential purpose of habitat restoration must be to restore biological diversity and ecological function.

There is huge pleasure for all of us who have been involved in seeing waving reed and wildfowl where once stood improved grassland, and in seeing those wintering bitterns tantalising us at Valley. It is every warden's dream to make that sort of difference – to see the before and after of your work – and rightly, this should spur us on to bigger and better things.

... and the future ... ?

The RSPB has set out new and bold targets for habitat restoration across the UK in its Futurescapes vision. This includes lowland woodland, heathland, reedbeds, wet meadows, upland heaths and open downland.

The framework exists, leading down from the Convention on Biological Diversity. We calculate that £20 million per annum would fund the Futurescapes vision and much of this could come from a re-focus of existing funds within the public and private sector towards re-creation. The success of the vision depends on the active involvement of the government, organisations, communities and people – it is not the RSPB acting alone.

Over the last decade, the RSPB has set about re-creating 7,600 hectares of wildlife habitat, working with a wide range of partners including the government, statutory conservation bodies and private companies. Drawing on our experience on our nature

reserves, we have developed major habitat restoration techniques, which prove that the proposals within Futurescapes are practical, achievable and sustainable.

Our ambitions for Anglesey are for more, of course. All those of us working towards the restoration of habitats on Anglesey have much to do. We will continue with the restoration and creation work at Valley and Malltraeth – and a warden always has the next project in mind. There are many of us waiting for the return of breeding bittern, and that day will be special for everyone, not just those directly involved. It will not, though, be a culmination of effort but a delightful moment of pleasure in a continuing undertaking to restore and cherish our wetland heritage.

Bittern painting, RSPB.

Table 1: **Current and proposed targets for habitat re-creation in the UK**

Habitat	Existing BAP target (hectares)	Existing Biodiversity Action Plan timescale	The RSPB's proposed target for 2020 (hectares)
Lowland heath	6,000	2005	32,000
Downland	1,000	2010	10,000
Wet grassland	2,500	2000	5,000
Reedbed	1,200	2010	2,400
Saltmarsh	2,100	2015	3,000
Upland heath	5,000	2005	10,000
Lowland woodland	20,000	2015	100,000

Table 2: **Habitat creation and rehabilitation by the RSPB since 1990**

Habitat	Total completed	In progress	Total
Lowland wet grassland	2,063	682	2,745
Reedbed	188	1,051	1,239
Lowland heathland	554	192	746
Reedbed	1,200	2010	2,400
Blanket bog	180	0	180
Raised mire	71	0	71
Caledonian pine woodland	480	2,020	2,500
Saltmarsh	0	88	88
Saline lagoon	23	3	26
Total	**3,559**	**4,036**	**7,595**

If you would like further information about Futurescapes and the RSPB's habitat restoration work, please contact **Jeff Kew** or **Peter Robertson** at our UK Headquarters.

Troi llanw yn y gwlypdir

Mae gwaith gan yr RSPB ar ddau ddarn o wlyptir ym Môn yn ceisio dadwneud dirywiad tymor hir ac adfer rhai o gynefinoedd pwysica'r ynys. Fel ym mhobman arall collwyd gwlyptir ym Môn trwy ddraenio a ffermio dwys ond, ddeng mlynedd yn ôl, dechreuwyd troi'r llanw. Ym Malltraeth, mae gwarchodfa adar 250 erw erbyn hyn ac, er y bydd yn cymryd amser, mae'r broses o greu gwlypdir newydd yn mynd yn dda.

Yn Y Fali, roedd gwelyau brwyn yn sychu ond mae cyfuniad o drin carthffosiaeth, creu sianeli dŵr a chlirio prysgwydd wedi dod ag aderyn y bwn yn ôl. Mae llawer wedi ei wneud ond mae cwestiynau'n aros ac, wrth i'r RSPB ail-greu cynefinoedd ledled gwledydd Prydain, y nod ym Môn yw parhau i weithio yn y ddau safle.

Pinch points – *a new concept for heathland management*

All Photos: Stephen Evans.

Three-lobed crowfoot poking through the ice.

How do you manage the special wet heathlands of Pembrokeshire so that the vegetation is not trampled to death, and yet also create the conditions required by a suite of rare mud-loving plants? While studying these plants, ***Stephen Evans*** *hit on a novel solution.*

Some of Wales' finest tracts of wet heathland and associated fen are to be found on its treeless western extremity around the city of St David's. Much knowledge is currently being gained about the most effective way to manage this wonderful windswept habitat. A crucial first step is to try and envisage the management that shaped the heathland in years gone by and, in this, we are most fortunate to have the 1811 writings of Richard Fenton. He was born near St David's and evocatively described Dowrog Common, the most well-known of these heaths, as "the famous moor called the Ddyfrog, part of an extensive tract of common… most of which is under water, and appears like a considerable lake for seven or eight months of the year, and is seldom dry, affording in winter abundance of wild fowl, and in summer a cooling run for the cattle and horses of the poor people of St David's and the adjoining farms…"

The Marloes peninsula, that other great treeless western headland of Pembrokeshire, has little lowland heath but it does have similar shallow winter water bodies or 'meres'. Again, Fenton provides superb insight into past conditions at Marloes: "The inhabitants of this village live chiefly by fishing, catching lobsters and crabs, and drive a considerable trade in leeches, with which Marloes mere, a little further on to the west of the village, abounds. This is a common nearly all overflowed in winter, but having in the summer the greater part dry for pasture, and in a very dry season nearly the whole, about sixty or seventy acres, affording support

during the hot months to the cattle of the villagers, who, with their desires bounded by habit, have all the little comforts of life within themselves, each his cow and his garden."

Today these two great peninsulas of Wales are home to rare plants that thrive in the open muddy conditions of the grazed margins of the meres and their surrounding wet heathlands and marsh. Three-lobed crowfoot *Ranunculus tripartitus*, yellow centaury *Cicendia filiformis* and pillwort *Pilularia globulifera* each have one of their UK strongholds in western Pembrokeshire. All three occur on Dowrog Common, which was the first of these lowland heaths and associated fens to become a nature reserve. In the 1970s the then West Wales Trust for Nature Conservation leased the common from the University of Wales who subsequently passed ownership of Dowrog, along with many other commons, to the National Trust. By then, cattle and horse grazing, so eloquently described by Fenton, had virtually ceased on Dowrog and the other commons. The wet heaths were managed more by occasional winter burns than by grazing. The Dowrog management committee spent many hours discussing stocking rates and burning rotations but it took a major study by the Nature Conservancy Council, compiled by Fiona Evans in 1989[1] to clarify ideal management regimes. The restoration of traditional cattle or pony grazing emerged as the most favoured management strategy.

A mass of three-lobed crowfoot

Trampling keeps the wet ground open.

The review offered some management advice for species such as three-lobed crowfoot or yellow centaury. It identified their need for poached areas where bare sub-soil is exposed but gave no guidance on stocking rates. Astonishingly both these annual rarities often grow in the same cattle or horse hoof print. Three-lobed crowfoot germinates in the wet mud in the autumn, flourishes in the tiny winter pools and fruits in the spring just before the yellow centaury germinates on the drying mud. This tiny member of the gentian family then grows through the summer when the three-lobed crowfoot seeds are dormant and sets seed before the heavy rains of late autumn start the crowfoot life-cycle again! It would be unrealistic to expect the vegetation structure over extensive areas of wet heath to be suitable for these two plants, as it would mean very high stocking rates causing excessive disturbance by poaching or rutting, to the detriment of other plants and animals.

While I was carrying out a detailed study of the management history of three-lobed crowfoot sites in Pembrokeshire for Plantlife in 1999, a possible solution to this dilemma presented itself – the concept of pinch points. These can be described as places where livestock movement is concentrated rather than dispersed.

Lots of the three-lobed crowfoot locations were at natural pinch points caused by surface boulders or by micro-topography or drainage lines. These were places where cattle or pony tracks converged and the trampling had destroyed the surface vegetation. Less permanent ones occurred around gorse or willow scrub. On numerous occasions I found places where scrub concentrated livestock tracks to the benefit of three-lobed crowfoot. Such pinch points were enhanced by the tendency of livestock to shelter from wind and sun amongst tall gorse or willow. There can be no doubt that similar ecological niches have been generated by pastoral farming since the Neolithic farmers started the clearance of the forests of this part of Wales. We even have a written record from 1603, from George Owen, the Pembrokeshire historian, who describes tall gorse as "the best shelter that cattle have, and gave them warm lodging in the winter season…". Here we have evidence for practices in Elizabethan times that would have created widespread pinch points suitable for rare heathland plants.

Path leading to the pond at Dowrog.

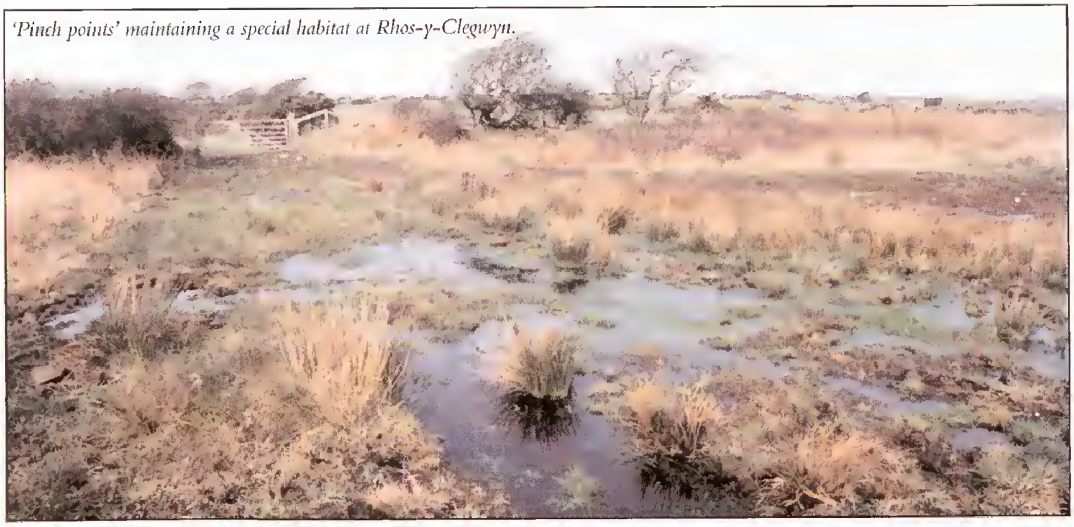
Pinch points can also be man-made. The most obvious pinch points are at gateways leading from field to field or from the edge of commons leading to the enclosed fields nearer the farmsteads. These would have been ideal niches for plants that like wet mud and open conditions because of the potential for seed transport on muddy hooves. Remember that there was often daily movement of working horses and cattle from farmyard to common during the summer months.

Unfortunately such gateways and the wettest sections of the most regularly used tracks have often gradually been filled with stone. The understandable agricultural instincts behind this should be curtailed when managing wet heaths for nature conservation. Instead, imagination should be applied to the lay-out and position of fences, gateways, boardwalks, firebreaks, ditches, pond spoil banks and other structures in an effort to create suitable new pinch points in winter-wet areas. Large sums of money have been spent on fencing nature reserves and even more money is now being spent on support for farming that is sympathetic to the environment, but how often have fences and gateways been deliberately used to create more ephemeral winter-wet habitats? Extra gateways could be sited in wet areas and used periodically to benefit key plant species. Fences, instead of taking a straight line along the driest route, could divert into a wet patch where existing scrub or boulders would force livestock to track through the wet hollow.

The possibilities are endless once the concept is grasped. As an alternative to fencing, a seasonal pool with a shallow margin or a ditch at right angles to a stock track could be created. The spoil and any semi-permanent features could then be used to force the cattle or horses to walk through the pool to reach grazing on the other side. This would provide ideal niches for pillwort as well as yellow centaury and three lobed crowfoot.

Disused hedge-banks in wet areas on heavy clay soil often develop winter-wet gaps, known as 'slops' in the Marloes peninsula and other parts of Pembrokeshire. These are, perhaps, model pinch points where cattle trek through during drier weather creating small winter pools. Fencing and rebuilding such derelict hedgebanks can destroy these ephemeral water bodies.

Overlaying natural pinch points where wet areas and livestock tracks converge with the right sort of occasional rutting by vehicles can be most productive. Many of our wet heaths have firebreaks and routes can be chosen so as to deliberately cross wet areas creating ruts and at the same time the very existence



'Pinch points' maintaining a special habitat at Rhos-y-Clegwyn.

of the cut firebreak can concentrate grazing animals. This can be most beneficial at the early stages of heathland restoration when soil disturbance may be essential to bring buried seed to the surface. There is even a case for deliberately and carefully cutting firebreaks along the full length of drainage lines and small streams at some grazed sites to open up overgrown wet heath, not just for rare plants but to the benefit of rare invertebrates such as the southern damselfly *Coenagrion mercuriale*.

The adoption of this simple pinch point approach to planning habitat restoration and maintenance for sites with rare wet heathland plants allows managers much greater flexibility. They can, for example choose stocking densities that suit other species or habitats. Perhaps more importantly in these difficult times for livestock farming, they can accept widely fluctuating grazing levels from year to year.

Stephen Evans has a lifelong interest in the natural history of Pembrokeshire, ranging from plant life on shore, for which he is the BSBI County Recorder, to marine life off shore.

References:

1 Evans, F and NCC (1989) *A Review of the Management of Lowland Wet Heath in Dyfed, West Wales* NCC contract survey report No. 42

Llecynnau dwys i helpu'r gweundiroedd gwlyb

Mae dulliau newydd yn cael eu datblygu i reoli'r gweundiroedd gwlyb prin yn Sir Benfro. Mae tystiolaeth o 1,811 yn dangos fod Comin Dowrog ger Tyddewi a thir ar benrhyn Marloes yn arfer bod dan ddŵr am ddwy ran o dair o'r flwyddyn. Erbyn heddiw, mae planhigion prin iawn ar y ddau benrhyn ac mae rhai ohonyn nhw'n ffynnu yn y pyllau bach sy'n dod yn ôl traed gwartheg a merlod. Y broblem yw ceisio'u hyrwyddo nhw heb i'r anifeiliaid or-bori a thorri gormod ar wyneb y tir. Yr ateb yw llecynnau dwys, lle bydd anifeiliaid yn casglu neu yn troedio llawer – yng nghysgod llwyni neu wrth fwlch i mewn i gae. Felly, mae angen dychymyg wrth drefnu defnydd o dir ar weundiroedd gwlyb, er enghraifft gyda bylchau ychwanegol, pyllau dŵr tymhorol neu ddefnydd o fylchau tân hefyd i gyfeirio llwybrau anifeiliaid. O ddeall y syniad, mae'r posibiliadau'n ddiddiwedd.

Ffoto: CCGC.

Llên y llysiau – *y fasarnen*

gan **Duncan Brown**

Y mae'r gyfres hon yn olrhain cysylltiadau llenyddol a hanesyddol gwahanol blanhigion. Sôn am darddiad enw'r fasarnen y mae ***Duncan Brown*** *yn yr ysgrif hon.*

Sycamorwydden, **jacmor**, **jacan** a **masarnen**: dyma enwau Cymraeg ar goeden sydd erbyn heddiw yn gyfarwydd ac yn gyffredin ar hyd a lled Cymru. Nid felly y bu erioed, fodd bynnag. Ceir **sycamorwydd** wedi ei ysgrifennu gyntaf yn y Gymraeg ym 1588 ym Meibl William Morgan:

Ar sicomor-wŷdd y rhai oeddynt yn y dyffrynnoedd

Cyfeirir yma, nid at y rhywogaeth dan sylw, ond at *Ficus sycomorus*, sy'n tyfu yng ngogledd Affrica a dwyrain Asia.

Cyfaddasiad o'r enw **sycamore** yw **jac(a)mor**, a arferir yn bennaf ym Môn, a **siacen**, **jacen** (a yngenir yn **siacan**, **jacan**) yn Llŷn ac Arfon. Ceir **masarn** (weithiau **sarnen**, neu **basarn** (Hincks, cys. pers.) gan fod *b* ac *m* yn ymgyfnewid, fel yn *benthyg/menthyg*) mewn rhannau eraill o'r wlad[1].

Daw'r gair masarn o'r Hen Ffrangeg **masre**[2] trwy'r Saesneg Canol **mazer** neu **maser**, a'r ffurf ddiweddarach **masar**[3]. Y gwraidd, meddir, yw **mas**, **maês** a olygai 'sug'. Y mae Edgar yn gofyn tybed a ellir cysylltu gwraidd y gair hwn â gwraidd **mes**?

Ymddengys i mi na ellir disgwyl fel arfer i rywogaethau nad ydynt yn gynhenid i wlad ddwyn enw sy'n gynhenid i'r wlad honno chwaith[4]. Nid rhyfedd, felly, mai enwau benthyg a geir ar y

Coed masarn yn cysgodi tyddyn yn ardal Llwyngwril, Meirion, cyn 1934.

fasarnen[5]. Cred gweddol gyffredin yw iddi gael ei thrawsblannu o gyfandir Ewrop i Brydain gan ddyn, rywdro yn ystod y cyfnod Rhufeinig, er nad oes tystiolaeth o gwbl ei bod yma mor gynnar â hynny.

Mae **sycamore** yn enw diweddarach na mazer. Nid ymddangosodd yn y Saesneg tan y flwyddyn 1578 pan gyfeiriodd Lyte ato yn *Herbal* wrth ddisgrifio coeden mewn gardd[5]. Enw a ddaeth, mae'n debyg, i'r Saesneg o'r Hen Ffrangeg yw **sic(h)amor** ac a ddaeth wedyn i'r Gymraeg[2]. Mae tarddiad estron y ddau enw, **masarnen** a **sycamorwydden**, yn gyson â'r dybiaeth mai coeden estron ydyw.

Ond a oes lle i dybio, fel yr awgrymir mewn rhai geiriaduron[2], fod **masarn** (a **mazer** yn y Saesneg o'i flaen) yn enw nid ar y goeden *Acer pseudoplatanus* estron, gyfarwydd, ond yn hytrach ar lwyn a elwir heddiw yn safonol yn 'masarnen y maes' *Acer campestre*? Llwyn gweddol di-nod sydd i'w weld yma ac acw ar draws Cymru yw hwn. Y mae'n gynhenid i Gymru ac i Brydain[6]. Mae'n wir na ddisgwylid cael enw o darddiad estron ar rywogaeth frodorol fel hon, ond nid yw hynny'n amhosibl.

Nid oes ychwaith enw o darddiad Celtaidd ar y goeden yn y Wyddeleg nac yn y Llydaweg. Yn y naill iaith ceir **seiceamar**, ac yn y llall **sikamoren**. Yn y Llydaweg cawn hefyd **skavenn-wrac'h wenn** am *Acer pseudoplatanus* sy'n addasiad o **skavenn-wrac'h** sy'n golygu, yn llythrennol, 'yr ysgawen wrach', sef yr enw Llydaweg am y llwyn *Acer campestre*. Beth, tybed, oedd enw'r Cymry am y llwyn *A. campestre*, cyn dyfodiad y gair **masarnen** yma?

Mentraf ddweud nad at y llwyn y cyfeiriai **masarn**. Mewn marwnad i uchelwr blaenllaw a rhyfelwr o'r enw Rhirid Flaidd y ceir y cyfeiriad cyntaf yn yr iaith Gymraeg at **masarn**[2] tua diwedd y 13eg G neu ddechrau'r 14eg G, ac o'r cyd-destun gellir tybio mai'r goeden sydd dan sylw, nid y llwyn:

maws massarn cadarn callon yaen

marwnad Rhirid Flaidd gan Gynddelw
13G. [*Llawysgrif Hendregadredd*]

Mae *yaen* yn golygu darn o rew, oerni neu galedwch. Felly golyga hyn 'teg yw masarn cadarn calon caledwch'

(h.y. bod Rhirid, fel y fasarnen, â chalon galed fel darn o rew) (Hinks, cys. pers.). Yn ddiddorol, un o nodweddion gwerthfawr pren y goeden a elwir yn Lladin yn *acer* yw ei galedi, sy'n ei wneud yn addas ar gyfer coflechi lle mae angen naddu ysgrifen[7].

Os nad oedd pren y fasarnen yn cael ei gludo yma dros bellter gan seiri, y mae'n dilyn ei bod yn tyfu yma yng Nghymru rhyw gan mlynedd o leiaf cyn cofnod Cynddelw ac yn goeden fawr, parod i'w thorri yn ei gyfnod ef. Golyga hynny bod y fasarnen wedi cyrraedd Cymru gyntaf yn fuan ar ôl i'r Normaniaid oresgyn Lloegr (a dod â chynifer o eiriau Ffrangeg Normanaidd gyda hwy) a chyn y goncwest Edwardaidd yng Nghymru. Teg yw gofyn, felly, paham nad oes enghraifft, hyd y gwelaf, o enw lle yng Nghymru sydd yn cynnwys ffurf ar unrhyw un o'r enwau Cymraeg ar y goeden hon, pan fo enwau lleoedd sy'n cyfeirio at goed mor niferus yma?

Diolch i
Dr. Rhisiart Hincks
o Adran Gymraeg Prifysgol Cymru, Aberystwyth, am ei gyngor ar nifer o agweddau o'r ysgrif hon.

The lore of plants

The **sycamore** is well known as an introduced species to both Wales and Britain but the timing of its arrival seems to be uncertain. The earliest record of the English word sycamore dates from the 16th century though the species is widely thought to be an earlier introduction. The oldest recorded use of the Welsh name for the species, **masarn**, is derived (through Middle English) from Old French and is first recorded in a 13th century Welsh poem. The word could originally have referred to the much smaller, native field maple, although one would have expected a native Welsh name for a native species. In any case, the literary reference describes the **masarn** as being 'fair' and 'hard of heart', hardly a description of the diminutive field maple. Though the name **sycamore** and the original English name **mazer** both derive from Norman French, this Welsh reference to the **sycamore** predates the previous earliest English reference to the species by three centuries and suggests that the tree arrived in Wales no later than the period between the Norman Conquest and the Edwardian conquest of Wales. All these names, both in English and Welsh, are conspicuous by their absence in place names, at least in Wales.

Ffynnonellau

1 Thomas, A.R. (1973) *Linguistic Geography of Wales – A contribution to Welsh Dialectology*, Cardiff, University of Wales Press
2 Thomas, R.J. (1950-67) *Geiriadur Prifysgol Cymru*, Prifysgol Cymru, Caerdydd
3 Edgar I. (1984) *Llysieulyfr William Salesbury: testun o lawysgrif LlGC 4581, ynghyd a rhagymadrodd ac astudiaeth o'r enwau llysiau Cymraeg a geir ynddo*. Traethawd doethuriaeth Prifysgol Cymru
4 Brown, D.J. (2002) *The foulmart: what's in a name?* Mammal Review (32, 145-149), Oxford Scientific Publications
5 Rackham, O (1986) *The History of the British countryside: The classic history of Britain's landscape, flora and fauna*, Phoenix Press, London
6 Stace, C. (1997) *New Flora of the British Isles (ed. 2)*, Cambridge University Press
7 Lewis, C.T. & Short, C. (1879) *A Latin Dictionary*. Oxford

Prosiect a gychwynnwyd gan Gymdeithas Edward Llwyd yw Llên y Llysiau i gofnodi pob math o gysylltiad rhwng pobl Cymru a phlanhigion. Mae'n ceisio casglu gwybodaeth am y rhywogaethau o dan nifer o benwadau, gan gynnwys tarddiad yr enw, cyfeiriadau llenyddol, enwau lleoedd, cofnodion hanesyddol, a'r defnydd o'r planhigion. Os oes gennych unrhyw beth i'w ychwanegu at y manylion isod, cysylltwch â **Duncan Brown**. Mae cyfeiriad e-bost Duncan wedi newid i dn.brown@ccw.gov.uk (rhif ffôn: 01286 650547).

Red squirrels *on Anglesey*

Photos: Craig Shuttleworth.

A few years ago Anglesey's once thriving red squirrel population was down to a handful of individuals, and extinction looked certain. It has taken a great deal of hard work and determination to reverse this dire situation, as ***Craig Shuttleworth*** *and* ***Martin Bailey*** *explain.*

"If the Anglesey Red Squirrel Project succeeds, it will be a considerable triumph, the first time in about a hundred years that our native red has been re-established in territory taken over by the grey invader."

1997 Report of the Trustees of the Esmé Kirby Snowdonia Trust.

The red squirrel *Sciurus vulgaris* is one of our most enchanting woodland mammals, but despite the universal appeal of this little creature, it is very likely that less than a thousand now remain in Wales. The national pattern of decline and local extinction can almost entirely be attributed to the spread of the introduced North American eastern grey squirrel *Sciurus carolinensis*.

During the 1960s the grey squirrel used the road bridges to invade the island of Anglesey, and within a few decades the species had colonised all of the available woodland habitat. By the late 1990s the red squirrel population had declined to a small number of animals confined within the Mynydd Llwydiarth conifer plantation and faced certain extinction.

At this point, although the outlook was grim, the island nature of Anglesey offered a unique opportunity to reverse the national pattern of local red squirrel extinctions. In 1996, Forest Enterprise and CCW began a trial to see whether grey squirrels could be eliminated using warfarin poison. The results showed that poisoning was ineffective, and consequently a grey squirrel trapping programme began in 1998.

Grasping the nettle

When the Anglesey project began, we could find little detailed guidance as to how to approach grey squirrel control over a large geographical area. The project therefore faced a very steep learning curve. Anglesey contains some 2,000 hectares of mature woodland spread over a 720 km^2 area and to tackle the whole grey squirrel population would require considerable

financial resources. With only a limited budget, we initially focussed grey squirrel control within Mynydd Llwydiarth and adjacent woodlands. As additional funding became available, the project progressively increased in scope and trapped woodlands further afield. All trapped grey squirrels were killed (in accordance with current wildlife legislation). Captured red squirrels were weighed, measured and marked (under CCW licence) before being released.

No more grey days for the red squirrel

A total of 3,700 grey squirrels were removed from the island during the first four years of the study. Sixty-eight of these were trapped within the Mynydd Llwydiarth plantation during 1998. Examination of the adult female carcasses obtained from this site indicated that most of the animals in the plantation (64%) were breeding. This meant that control had not only removed adults but had also prevented the weaning of significant numbers of young into the woodland containing the remaining red squirrels.

Red squirrel captures were very infrequent in 1998 with only eleven animals being identified. This gave considerable cause for concern, and the situation was exacerbated by the fact that relatively few (50%) of the females caught showed signs of reproduction. However, the capture of a number of unmarked adults during 1999 allowed a simple retrospective population density estimate to be made for 1998. This suggested that thirty-nine adult reds had been present and that the status of the species was not as grave as the 1998 trapping had originally suggested.

Removal of grey squirrels from adjacent broadleaved stands was relatively successful at limiting immigration into the conifer plantation as only six greys were caught in the following year (1999). However, the results of blood tests revealed that 60-75% of grey squirrels had anti-bodies to the para-pox virus, a disease that can devastate local red squirrel populations. This meant that even a single grey squirrel within the conifer plantation represented an unacceptable disease risk to the red squirrel population.

Following the removal of the grey squirrels, a combination of favourable adult survival rates and high (58-73%) female reproduction (*Table 1*) resulted in a dramatic increase in the red squirrel population so that more than 70 adults were present in the spring of 2000.

The recruitment of young red squirrels into the Mynydd Llwydiarth population was exceptionally high (75%) over the winter of 1999/00 and as a result the population contained a significant number of yearlings in 2000. However, juvenile recruitment declined to 40% (2000/01) and then 16% (2001/02). The sharp decline in recruitment probably reflected the progressive reduction in opportunities for young animals to find a home range as the adult population size approached the maximum that the plantation could support. Using a Habitat Suitability Model we estimated that there would be space for approximately 110 individuals.

Red squirrels in broadleaved woodland

With space limited within the conifer stands, in the winter of 2000 red squirrels began to colonise adjacent broadleaved woodlands. During the summer of 2001 a litter was found in hazel woodland some 500m from the nearest conifer block. These young would probably have been the only animals born in broadleaved woodland in the whole of Wales and as a result they represented a considerable achievement for the project. A total of ten animals were discovered using this site during 2001, and in the autumn it was common to see three or four animals foraging within the hazel coppice. To the delight of local

Table 1 **Red squirrel population dynamics in the Mynydd Llwydiarth plantation** (Data collected in the period 1998-2002).

Year	Spring adult population size* (n)	Adult & Yearling female reproduction (%)	Adult survival rate from the previous year (%)	Juvenile recruitment from the previous year (%)
1999	38 - 43	73	72	No data
2000	72 - 82	65	74	75
2001	79 - 114	58	70	40
2002	78 - 95	70	65	16

* Minimum Number Alive and Constant probability of capture 'closed' population calculations.

Mynydd Llwydiarth: in 2 years from 1998 the number of adult reds increased from less than 40 to more than 70.

people some red squirrels also began to regularly visit gardens near the forest edge.

Genetics

Menter Môn commissioned a study of the genetics of the red squirrel population in 2002. This revealed that the Anglesey animals were genetically distinct from the population within the Clocaneog forest. Interestingly, almost all of the Anglesey adults show distinct tail-bleaching in the summer. The tail hair progressively changed from red to a straw yellow colour. This characteristic is relatively uncommon in UK populations and suggests that the Anglesey animals are of pure native stock.

Red squirrel nest boxes

Red squirrels construct nests high in the woodland canopy and each animal will have several nest sites. Unfortunately, these nests can become waterlogged during periods of prolonged bad weather and this can lead to the death of young. Red squirrel nest boxes have proved successful in other woodlands, so in February 2001 we erected 60 in the plantation. These boxes are large enough to fit a football inside and are filled with hay to provide material within which the squirrels could nest. In the initial six months only a small proportion of the nest boxes were used by reds (13%) but by the winter/ spring of 2002 this had increased (21-33%). This indicated that at least some adult red squirrels found the boxes attractive nest sites and in early June a litter of two young were discovered in a box. It is hoped that the boxes will yield further information on breeding in future years.

Future expansion of the population

The increase in the Anglesey red squirrel population (*Table 1*) has demonstrated that local conservation can be achieved through grey squirrel control. This is the first time that this has been demonstrated in the UK. However, the relative isolation of Mynydd Llwydiarth means that there is only scope for population expansion into broadleaved woodlands within one or two kilometres of the forest. As a result of this, the project will re-introduce red squirrels into Newborough forest in 2003. The re-introduction programme is a partnership between the Anglesey red squirrel project and the Welsh Mountain Zoo.

Craig Shuttleworth is the red squirrel ecologist at Menter Môn; **Martin Bailey** is a consultant at Wildlife & Countryside Services.

Cefnogi'r cochion

Cafwyd gwared ar 3,700 o wiwerod llwyd o Ynys Môn mewn pedair blynedd trwy gynllun i warchod gwiwerod coch. Penderfynwyd canolbwyntio ar goedwig fythwyrdd Mynydd Llwydiarth, unig gartre'r gwiwerod ym Môn erbyn diwedd y 90au – roedden nhw ar fin diflannu o'r tir. Gyda lefelau uchel o oroesi a magu, llamodd nifer oedolion coch o 39 yn 1998 i fwy na 70 yn 2000. Yn ystod haf 2001, cafwyd teulu mewn coed cyll tua 500m i ffwrdd ac mae rhai wedi eu gweld mewn gerddi. Dangosodd profion genetig fod gwiwerod coch Môn yn wahanol i rai Clocaenog ac mae arwyddion eu bod o stoc brodorol pur. Mae'r cynllun yn dangos fod modd gwarchod gwiwerod coch trwy reoli gwiwerod llwyd. Bydd rhai coch yn cael eu hail-gyflwyno i goedwigoedd Niwbwrch yn ystod 2003.

To everything there is a season

Cockchaffer

Photo: Mike Hammett/CCW.

*When **Fred Slater** first began recording information about the wildlife at Llysdinam some thirty years ago, he had little idea what this would reveal about our changing seasons.*

One of the certainties of country living has always been its predictability. R.S. Thomas, that great Welsh poet, wrote of "The rhythm of the seasons…The redwings leave making way for the swallows: The swallows depart, the redwings are back once more. But man remains summer and winter through…". For centuries farming has been governed by this predictable cycle of the seasons but in the last few decades the foundations of this predictability have begun to shake, even in apparently unshakable mid-Wales.

As a professional watcher of nature, the comings and goings of wildlife in the mid-Wye valley have been noted and amassed by me over the years, unaware originally that I was documenting a slippage in the clock that always seemed to govern the seasons.

Working at a site where pied flycatcher nest box data extend patchily to before the First World War, I started examining first-egg date fluctuations for this spring visitor in mid-Wales during the twentieth century. Most change occurred during the last quarter century. This corresponded to a period during which I collected data for breeding times in certain amphibians and activity times for two insects from the same site at Llysdinam, in mid-Powys. Such relatively long-term data sets, particularly relating to several species at one location, are scarce and in this case seem to show an orchestrated response linked to climate change.

Two amphibians

Investigators at Llysdinam have been working on amphibians for almost 30 years using data largely collected using interception barriers and pitfall traps at local breeding sites. Such information, beginning in the early 1970s for

the common toad (*Bufo bufo*) and 1980 for palmate newts (*Triturus helveticus*), is still being collected, giving a good backward glance at changes over time.

Main photo: Fred Slater. Inset: CCW.

Main photo: Moth trap at Rothampsted. Inset: Palmate newt.

Over a 30-year period a highly significant change has occurred in the date of the arrival of the first male toad to its breeding site (from after the 11 March to about 20 February or earlier). Over a 20-year period the first date of arrival of male palmate newts has also changed significantly. This first newt arrival date now occurs in late autumn of the previous year and is becoming difficult to differentiate from the tail end of that year's activity. If the most 'popular' arrival date for male palmate newts is used, the significance of change is reduced but not eliminated.

One Bird

Over the last 30 or so years, pied flycatcher nesting data from Llysdinam show a strongly significant change towards an earlier first-egg date in this migratory species, from towards the end of the third week of May to early in the first week of the month. Pied flycatchers are spring visitors to Wales, generally spending little more than ten weeks in woodlands from mid-April. As a migrant this species must receive its circadian cue to return whilst still in its far off wintering grounds. Nevertheless, its first-egg date has tended to get earlier over the last thirty years. Data for the main egg-laying date also confirm this earlier trend, to a less marked degree. The general synchronicity of breeding of this species suggests a common goal, probably to produce young when the food source, in this case mainly larval *lepidoptera* on oak, is optimal.

Two insects

Daily collections from a Rothamsted moth trap at Llysdinam from the late 1970s to the present provide data on the Chestnut moth *Conistra vaccinii*, which over-winters as an adult, appearing in catch records in both autumn and spring. Over the period from 1976 to 2000 the number of weeks in winter over which it did not occur has dropped from about 15 to 5.

The same trap also captures the cockchafer *Melolontha melolontha*. In the 1970s this beetle was abundant but an obvious decline in numbers by the early 1980s stimulated the archiving of some cockchafer data. From 1984-2001, the first appearance of the insect in the moth trap became significantly earlier. The May Bug, as it is often known, used to first appear about the third week in May but now it often turns up in the first few days of the month – will it soon become the 'April Bug'?

The earlier appearance of insects could mean that birds such as the pied flycatcher are responding by beginning to breed earlier, probably synchronous with the availability of optimum insect food for their young.

Responses to a changing climate

No one can doubt from reading the literature that plants and animals appear to be adjusting to a changed climatic regime. However, the changes at one location over two to three decades of such a range of wildlife has not been fully documented before, certainly in Wales.
The general severity of the winter is likely to be

reflected in the activity of the Chestnut moth. Temperatures more favourable to activity extending later into the autumn and occurring earlier in spring would explain the observed response.

The palmate newt data takes the first arrival date back into the previous year i.e. before the shortest day, eliminating increasing day length as a movement cue, but it is only a minority of individuals that begin to move towards the pond in late autumn; most move, as in the past, in late winter and early spring. The early minority cannot be taking warmer springs as a temperature cue, but cumulative degree-days over the warmer seasons might, it is suggested, directly or indirectly provide the answer.

The arrival date of the first male toad to its breeding pond, like the palmate newt, has become earlier. This date has not, as yet, extended back beyond the winter solstice. Again, like the palmate newt, the main migration arrival has changed little over the years and the critical temperature for movement seems largely unchanged.

If these observations suggest a response to milder winters, they also suggest that populations of cold-blooded organisms respond cautiously by putting only limited resources into a vanguard of change with most of the population opting for the successful strategies of the past, a true evolution of response. The cockchafer fits with this pattern, as its first appearance at our moth trap in May has become earlier in spite of the fact that numbers have reduced.

If, however, the seasonal clock for the whole year is moved forward, it would be reasonable to expect a response later in the season by organisms not inhibited by winter cold but who can take advantage of a longer breeding season or need to synchronise with changing seasonal cues. The pied flycatcher falls into this category.

The data presented here were not collected with the intent of demonstrating behavioural changes in these particular species. From this point of view the species were selected with a serendipitous randomness. If such matching responses can be shown in such diverse species selected in this way then it seems likely that much of the biota of Wales, and indeed Britain, is responding similarly to the backward rolling of the seasons, remarkably, without the complex web of interactions between species apparently falling apart – or am I speaking too soon!

For nearly 30 years **Dr Fred Slater** has been Director of Cardiff University's Llysdinam Field Centre in Newbridge-on-Wye, Powys.

Photo: Mike Hammett/CCW.

Pied flycatcher.

Ac mae awr i bob rhyw bwrpas...

Heb yn wybod, mae fy nghlofnodion ym Mhowys yn dangos bod trefn y tymhorau'n cael ei siglo. Dros chwarter canrif, rwyf wedi nodi'r newid yn nyddiad wyau cynta'r gwybedog brith ac wedi casglu gwybodaeth am gyfnod magu'r llyffant cyffredin a'r fadfall balfog ac amser gweithgaredd gwyfyn y gasten a chwilen y bwm. Dros 30 mlynedd, mae gwrywod cynta'r llyffantod a'r madfallod yn cyrraedd llawer cynt. Symudodd dyddiad dodwy cynta'r gwybedog o ddiwedd trydedd wythnos Mai i ddechrau'r wythnos gynta'. Yn 2000, am bum wythnos yn y gaea', yr oedd gwyfyn y gasten yn absennol – o gymharu â 15 yn 1976. Mae chwilen y bwm yn ymddangos llawer cynt. Os yw'r un duedd i'w gweld mewn rhywogaethau mor amrywiol, mae'n ymddangos fod llawer o fywyd gwyllt Cymru yn ymateb i symudiad cynharach y tymhorau.

Nodiadau'r **Cynulliad/Assembly** *Notebook*

gan/by **Gethyn Williams**

Does dim rhaid i chi fyw mewn ogof ar y blaned Mawrth, gyda'ch bysedd yn eich clustiau, i beidio â bod yn ymwybodol fod yna etholiad ar y gorwel. Ar ôl treulio pedair blynedd yn ychwanegu dŵr poeth Cymru at bolisi powdr San Steffan, mae etholiad ar fin dod. Yn sicr, fe fydd yr ymgyrch ym mis Mai yn canolbwyntio ar bersonoliaethau, ar sgandal, ar sarhau yn y dull traddodiadol, ac, os byddwn ni'n lwcus iawn, ar drafod rhywfaint o bolisïau.

Mae'r agenda amgylcheddol yn nhymor cyntaf y Cynulliad wedi canolbwyntio ar y syniad o ddatblygu cynaliadwy (DC). Rydym yn clywed bod Cymru'n arloesi yn y maes yma, a bod eraill yn edrych i'n cyfeiriad er mwyn dilyn ein hesiampl. Fe aethom i Johannesburg, gan ddod adref gydag un o'r ychydig ganlyniadau cadarnhaol a ddaeth yn sgîl yr Uwch-gynhadledd, sef Datganiad Gauteng. Mae hyn oll, yn sicr, yn wir, ond eto i gyd, mae'r amgylchedd ymhell o fod ar frig yr agenda etholiadol.

Ond oni ddylem ni fod wedi arfer â chael ein gosod ar yr ymylon fel hyn? Dyna yw eich cri, rwy'n siŵr. Materion traddodiadol, fel iechyd a threthi, sydd bwysicaf bob amser adeg etholiad – does yna ddim lle i rwdl-mi-ri'r adain chwith! Dyna, yn sicr, yw'r ateb syml. Ond mae yna ateb arall: tybed a yw consensws gwleidyddol eang DC heb adael digon o le (o ran ymgyrchu) ar gyfer trafod neu anghytuno? A ydym ni'n dioddef yn sgîl ein llwyddiant yn y pen draw?

Fis Rhagfyr diwethaf ym Mhrifysgol Cymru, Caerdydd, rai oriau'n unig ar ôl i Rhodri Morgan ddweud wrth gynrychiolwyr yn Abertawe nad oedd DC yn mynd i ennill etholiadau, fe wnaeth Jonathon Porritt (Forum for the Future) sylwadau yr un mor onest ynghylch y ffordd rydym ni'n edrych ar yr eco-Feseia yr ydym yn ei alw'n 'ddatblygu cynaliadwy'. Fel y dywedodd Porritt, mae pawb, bron iawn, yn cefnogi datblygu cynaliadwy yn ei hanfod, ond does neb, bron, yn gwneud fawr ddim o'r hyn sydd angen ei wneud.

Fe all hunanfoddhad ddod yn sgîl hyn, ac os gellir credu Jonathon Porritt, fe allwn ni fethu ag ymdrin â chalon y broblem. Felly, does dim angen synnu o weld pa mor bell yw materion amgylcheddol o feddyliau pleidleiswyr. Os ydym ni i gyd yn cytuno bod DC yn un o'r pethau pwysicaf ers bara tafellog organig a gafodd ei bobi'n lleol, yna pa ddiben ymgyrchu? Allwn ni ond gobeithio y gall Aelodau'r Cynulliad ym mis Mai – ni waeth pwy fyddon nhw – roi ystyr ymarferol i'r agenda yma, nid yn unig ymhlith ei gilydd, ond ar gyfer pobl Cymru'n ogystal.

Mae **Gethyn Williams** yn Swyddog Gwybodaeth y Cynulliad ar gyfer Cyswllt Amgylchedd Cymru.

You don't have to have been living in a cave on Mars with your fingers in your ears to be unaware that there's an election on the horizon. After four years of adding hot Welsh water to powdered policy from Westminster, election time is here. The campaign in May will no doubt be dominated by personality, scandal, some good old fashioned mudslinging and if we're very lucky, some policy debate.

The environmental agenda in the first term of the Assembly has been dominated by the concept of sustainable development (SD). We are told that Wales is a pioneer in this field, that others look to us for example. We went to Johannesburg and brought back one of the Summit's few positive outcomes in the Gauteng Declaration. All of this is undoubtedly true, yet the environment is still depressingly low down the election agenda.

Well yes, I hear you cry, but shouldn't we be accustomed to such marginalisation by now? Traditional issues such as health and tax always come to the fore during elections – there just isn't room for all that trendy-lefty stuff! That's certainly the easy answer, but there is another: could it be that the broad political consensus SD has achieved leaves no room (at campaign level) for debate or disagreement? Is it that we are simply victims of our own success?

Last December in Cardiff University, just a few short hours after Rhodri Morgan told delegates in Swansea that SD was not going to put crosses on ballot papers, Jonathon Porritt (of Forum for the Future fame) made some equally honest points about the way we view this eco-Messiah we call sustainable development. As Porritt says, practically everyone seems to support the concept of sustainable development, and practically nobody is really doing what they need to do about it.

This brings with it the danger of complacency and, if Jonathon Porritt is to be believed, of missing the point entirely. So is it any wonder that environmental issues are distant in the minds of voters? If we all agree that SD is the greatest thing since organic, locally-produced sliced bread, then what's the point in campaigning on it? One can only hope that whatever combination of AMs enters the Assembly in May, they can give this agenda practical meaning, not just amongst themselves but for the people of Wales.

Gethyn Williams is Assembly Information Officer for Wales Environment Link.

Green **Bookshelf**
Silff Lyfrau *Amgylcheddol*

New Atlas of the British & Irish Flora

C.D. Preston, D.A. Pearman
and **T.D. Dines**
Oxford University Press 2002, hardback.
ISBN 0 19 851067 5 £99.95

This short review could simply say "At last, magnificent, go and buy a copy before they sell out! If your bank balance will stand it!"

To expand on this a little, this Atlas is the result of the dedicated hard work of over 1,600 volunteers who noted the presence of 2,412 flowering plants and ferns in 99.2% of the 10km squares of Great Britain and Ireland since 1987. That's a total of over 5 million records from 2823 squares. These data were all analysed and plotted by a small team at the Centre for Ecology and Hydrology and the resulting database enables us to combine and compare the results with those from pre-1987 surveys and the original 1962 Atlas. The fieldworkers were co-ordinated by Trevor Dines who has since become Plantlife's officer for Wales; no need to wonder why a Welsh poppy adorns the cover of the book!

The maps which make up the bulk of this Atlas are truly stunning; the evidence of the declines and increases in our flora is there for all to see. The accompanying text provides some insight into species requirements and status change, whilst the introductory chapters help explain some of the changes we can see. The role of climate change, acidification and nutrient enrichment is examined, and further scientific analysis of the data is due to be reported on next year.

The attached CD-ROM also allows us to play with the data ourselves and to examine the distribution of a further 940 rare alien species. The authors and their team have made a lasting contribution to the understanding of our flora here on the edge of the Atlantic that will act as the source of many more studies that can examine the effects of climate and habitat management change over the past and future 50 years.

Liz Howe

Straw Dogs – Thoughts on Humans and Other Animals

John Gray, Granta Books, London 2002
ISBN 1 86207 512 3 £12.99

In my review of Edward O Wilson's *The Future of Life* in the last issue, I referred to the contention that humans will not be able to use the power of reason to avoid exterminating nature. I thought I ought to read the book behind this controversy myself – **John Gray's** ***Straw Dogs – Thoughts on Humans and Other Animals*** (Granta books 2002). Why has a work of philosophy, which from its reviews would seem set to downcast, rather than uplift the reader, had such acclaim? Its central thesis is surely a chilling one – that humanism, with its belief in human progress, is a false religion, and that humans, far from being masters of our own destiny, are just like other animals, in thrall to our assemblies of genes and devoid of a moral compass.

What I discovered was rather a surprise. The text is strewn with short, pithy statements, such as "Humans are like any other plague animal. They cannot destroy the Earth, but they can easily wreck the environment that sustains them." Gray does not obfuscate or pull his punches. Simply, *Strow Dogs* is a good read. I admired the *brio* of his summaries of the great philosophers, which I found instructive, and found his conclusions thought-provoking rather than controversial. He asserts that, largely thanks to Christianity, we have an inflated idea of the importance of morality. Then he admits that moral principles are rules of thumb for living well. That strikes me as a pretty good reason for having moral principles.

John Black took apart the western world view and its belief in progress in *The Dominion of Mon – The Search for Ecological Responsibility* published over thirty years ago. I note that Black does not seem to get a mention in the further reading lists after each chapter, although Wilson repeatedly does. The cross-over between ecology and philosophy and the social sciences, which Wilson has done so much to pioneer, is bearing fruit. The idea of humans as biological animals suffuses Gray's philosophy, and the largely common sense result is expressed with enviable clarity.

James Robertson

Cloi'r Camera
Pedwerydd dyddiadur naturiaethwr

Ted Breeze Jones, Gwasg Dwyfor, 2002.
82 tud. ISBN 1 870394 99 2 £8.95

Ybedwaredd a'r olaf mewn cyfres yw'r gyfrol hon o ddetholiadau o ddyddiaduron **Ted Breeze Jones** a gasglwyd at ei gilydd gan Anwen, ei weddw.

Rhaid imi ddweud ar y cychwyn fy mod wedi mwynhau pob eiliad o ddarllen y gyfrol yma. Roedd TBJ yn ei ddydd wedi defnyddio radio, teledu a phapur i gyflwyno'i waith. Yn fy marn i, y cyfrwng yr oedd yn rhagori ynddo oedd y llyfr ac mae'r gyfrol hon yn profi hynny. Mae'n dipyn o gamp creu dyddlyfr sydd nid yn unig yn addysgiadol ac yn frith o ffeithiau natur ond hefyd yn stori ddifyr. Mae'r llyfr yn gampwaith oherwydd fod TBJ yn feistr ar y dasg o blethu'r nodiadau natur gyda phytiau o storïau, hanesion, troeon trwstan ac arferion cefn gwlad. Fel pob athro da, mae wedi medru rhoi cymaint o siwgr ar y ffeithiau moel fel nad yw'r darllennydd yn sylweddoli cymaint o addysg sydd yn y pwdin hefyd. Mae ei ffotograffau penigamp yn ychwanegu at y mwynhad – ac yn angenrheidiol mewn ambell fan pan fentrodd i ardaloedd estron nad ydym yn gyfarwydd â nhw.

Argymhellaf y llyfr hwn i unrhyw un sydd â diddordeb yng nghefn gwlad. Mae'r enwau adar weithiau yn mynd i greu penbleth i rai nad ydynt yn gyfarwydd â hwynt ond prin iawn y byddai hyn yn peri i neb roi'r llyfr o'r neilldu. Yn wir, gallai hyn ysgogi llawer i chwilio ymhellach i hanes yr adar. Mae'r lluniau yn help i'r anghyfarwydd wrth gwrs ond gresyn na fyddai capsiwn i bob un o'r lluniau. A thra yn y cywair beirniadol gresyn i'r wasg roi prif lythrennau i enwau adar a phlanhigion. Mae hwn yn arfer hen ffasiwn· iawn, iawn ac nis defnyddir mwy gan unrhyw un o eiriaduron safonol Cymraeg na Saesneg.

Tybed a fydd y pris o £8.95 yn 'ffeithio ar y gwerthiant. Gresyn fyddai hynny.

Llyr Gruffydd

Nature *at large*

Frances Cattanach provides a round up of mammal news

North Wales has had its fair share of dolphin activity this year. I was lucky enough to see 6 bottlenose dolphins steam past Fedw Fawr, Llangoed, Anglesey. Sally Pidcock, the Great Orme Country Park warden reports that many people have also enjoyed the sight of up to 20 dolphins with calves around the Orme, during August and September. She notes that dolphin and porpoise activity around the Orme has increased in the last two years.

Local residents and visitors to Cwm Tŷ Du, a popular little beach just south of Newquay, were delighted that a mother grey seal felt secure enough to give birth to her pup in the bay in September. Once born, pups are helpless on the beach for 3 weeks. Clearly, during this time they are extremely vulnerable to disturbance, but local wardening ensured that this was kept to a minimum, and the pup survived to take to the sea. Those interested in the seals' welfare are petitioning the local council to close the beach during those critical few weeks. For more information, visit the web-site; **www.cwmtydu-bay-wildlife.org.uk**.

Sarah Jones, from the North Wales Wildlife Trust, was dismayed and intrigued to pick up a lactating bitch otter road casualty next to the Pen y Pass youth hostel on Snowdon in the autumn. Otters may be moving from catchment to catchment over mountain passes more regularly than we realise.

The Deeside Urban Wildlife Group's 'Flintshire Hedgehog Awareness Project' is collecting records and distributing information about attracting hedgehogs into gardens. Through the project they aim to identify, protect and enhance existing habitats for hedgehogs.

Nigel Brown at Treborth in Bangor reports that this has been an extremely lean year for hedgehogs in the University Botanic Gardens. He has only one record, and in most years he has recorded them on more than 50 nights. Such news brings into sharp relief the difficult issues facing conservationists on the small and well-populated British Isles. The well-publicised news that in Scotland the Uist Wader Project is investigating methods of reducing the hedgehog population on the islands, as part of their plan to restore and safeguard internationally important populations of wading birds, raised vociferous concerns. On South Uist and Benbecula, snipe, dunlin and ringed plover have declined by 60% since 1995, and the project claims there is clear evidence to show that high levels of egg predation by hedgehogs are causing the decline. In 1974, four hedgehogs were introduced resulting in the current population of 5000 adults, producing ca. 10,000 young a year. This follows a similar situation on North Ronaldsay where, in 1986, hedgehogs were transported to the mainland. It was later thought that a collapse of the sand eel population was the true cause of the seabird decline. In our animal-loving nation, where hedgehogs are a visible element of our local wildlife, there is a natural inclination to want to transport these Scottish hedgehogs to hedgehog-thin parts of our isles. However, we should remember that there are reasons why hedgehogs are in the numbers they are. On Uist, there are no badgers, foxes and few fast cars to limit the population, and perhaps the habitat is preferable to our intensely cultivated land. In mainland UK, the populations are likely to be influenced by many factors, including cultivation, pesticides, vehicles and winter mortality. We can do what we can to safeguard natural populations of hedgehogs, but unless we know the reasons why they are at the levels they are, there is no point in transporting visitors from the Scottish Isles to the mainland and subjecting them to the same pressures.

Still on the subject of introductions, Craig Shuttleworth of the Anglesey Red Squirrel Project reports that red squirrels have responded positively to the control of grey squirrels and can now be found throughout the Mynydd Llwydiarth conifer plantation and some adjacent broadleaved habitats. In 2003, he anticipates that red squirrels will naturally re-colonise some other woodlands. However, in order to give them a helping hand, a pilot re-introduction is planned in the west of the island. This new phase is a partnership between Menter Môn and the Welsh Mountain Zoo and, if successful, will further boost red squirrel numbers in Wales. See pp 35-37.

Introductions, re-introductions or translocations – call them what you will – will continue to raise important questions about our relationship with the natural world, and hopefully more stimulating debate. See Nigel Ajax-Lewis's article in *Natur Cymru* Issue 4 for further reading.

Please contact me with any mammal sightings, comments or notes of interest at the North Wales Wildlife Trust on 01248 351541 or e-mail me on **fcattanach@cix.co.uk**

Natur y byd

Ymhlith yr uchafbwyntiau, roedd golygfa o hyd at 20 dolffin a'u lloi ger Pen y Gogarth a morlo yn geni ar draeth Cwmtydu ger y Cei Newydd. Mae rheolaeth ar wiwerod llwyd wedi helpu gwiwerod coch yn Mynydd Llwydiarth yn Sir Fôn – mae rhagor yn cael eu hail-gyflwyno yng ngorllewin yr ynys. O'r ochr arall, blwyddyn wan iawn oedd hi i ddracnogod yng Ngerddi Botanegol Prifysgol Bangor – dim ond un cofnod, lle bydd mwy na 50 fel arfer.

Marine *matters*

The view from Martin's Haven across to Skomer.

Photo: Trevor Williams.

Welsh islands round-up – Skomer and Skokholm

Compiled by **Geoff Gibbs**, from material supplied by **Juan Brown** (Skomer) and **Graham Thompson** (Skokholm).

Skomer and Skokholm lie 20 km west of Milford Haven. They are managed by the Wildlife Trust of South and West Wales with resident staff for most of the year. Skomer is famous for having the largest Manx shearwater colony in the world (102,000 pairs), while Skokholm has the largest Welsh storm petrel colony. For more information, including details about visiting or staying, contact the Wildlife Trust of South and West Wales, Cilgerran, Cardigan SA43 2TB, tel: 01239 621212, e-mail: **wildlife@wtww.co.uk**

Among high-profile visitors to Skomer last year were Welsh Premier Rhodri Morgan along with a Swedish bird. Before you think 'tabloid scoop', I must point out that the bird in question was a red-backed shrike, of likely Swedish origin! The First Minister enjoyed a picnic in the sun at the island's farm, in an exercise aimed at promoting Skomer and tourism.

Seabird monitoring: some up, some down

Seabird monitoring has proved its value over the years. Intensive bird ringing on Skokholm between 1933 and 1976 produced much pioneering material. New, less intrusive methods of monitoring have been developed, such as the use of 'tape responses' to monitor nocturnal, burrow-nesting birds such as Manx shearwater and storm petrel. These methods are providing vital information, for example about the impact of the oil spillage from the tanker *Sea Empress* in February 1996.

The population of lesser black-backed gulls on Skomer peaked in the early 1990s. The subsequent fall in numbers is thought to be the result of a decrease in the availability of food from landfill sites and from fisheries discards. Just over 15,000 pairs were counted in 2002. They had an especially poor breeding season, with an estimated 0.14 young fledged per pair. Torrential rain and stormy conditions in mid-May were contributory factors. Lesser blackbacks on Skokholm (around 2,200 pairs) and herring gulls (243) both reared very few young.

In contrast, guillemots on Skomer continued to increase, to over 14,000 individuals, compared to less than 4,000 in the 1970s. The razorbill all-island count, at 5,095, was the biggest total ever, and puffins were back on track, with a maximum spring count of 10,338. Guillemots and razorbills on Skokholm also continue to increase, new sub-colonies springing up each year, and both species top the 1,000 individuals mark.

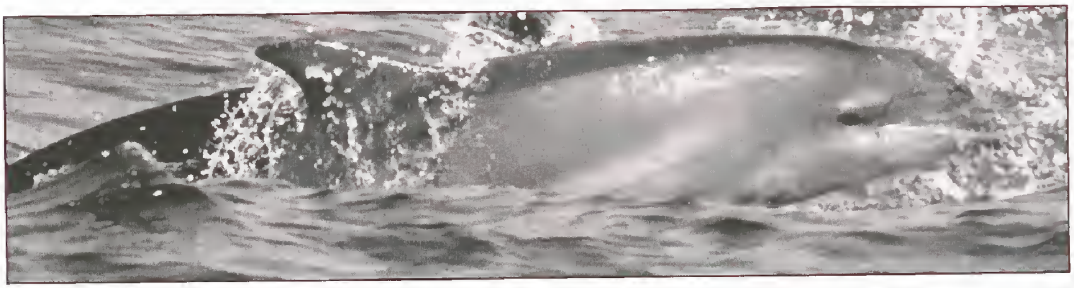


Photo: Emily Lewis-Brown, WWF.

Bottlenose dolphin.

Problems with bad weather

Rough seas on Skokholm coinciding with spring tides caused herring gull nests to be washed away from the low-lying area of The Neck. May storms washed many kittiwake nests off the lower ledges on Skomer, and as a result only 1,863 were counted in June (373 less than last year). The 'productivity' of 0.60 fledged per nest was reduced as a result of this, but is still a significant improvement on the very poor breeding year of 2001, when an average of only 0.21 fledged per nest.

A violent storm, force 11, hit Skomer on 27 October. Thankfully, the north-westerly direction meant the aging bungalow at North Haven was relatively sheltered, with the North Castle outcrop taking the brunt. We didn't escape unscathed though, with the North Pond Hide completely blowing over, and the wall of the 'Common Room' at the Farm being ripped away.

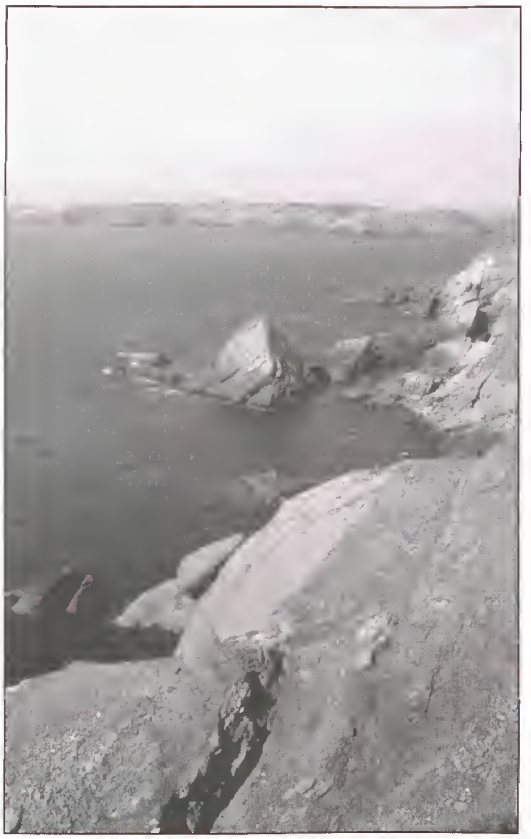


Photo: Trevor Williams.

Problems with tourist boats

Boating activities in the waters around Skokholm have suddenly escalated. Two companies run 'safaris', and puffins in particular are the target, with boats driven right into rafts of birds and causing them to scatter. The August Bank holiday weekend proved to be a nightmare for staff and wildlife alike, as numerous dive boats and pleasure craft converged upon the island, with basking grey seals the main target for one and all. Despite great efforts to communicate with the boat skippers and divers, they continued to hassle the animals, nosing boats to within a metre, thus chasing them off the rocks (some seals having to descend from a height of 3 metres over jagged pieces of sandstone) and then following them when in the water.

Problems with rabbits

Habitat management on Skomer in 2002 included the construction of a number of temporary rabbit exclosures, in an effort to restore patches of heathland. This habitat has experienced significant decline on the island since the cessation of farming, probably mainly due to the grazing activities of a sizable rabbit population. Exclosures, made of chicken wire, were introduced in 1998. They are half a metre high, with a similar width pegged down on the ground (with no wire below ground), thus ensuring minimal visual impact and ground disturbance. They are designed to be removed after only a few years, when heather shoots have had an opportunity to become established.

The result has been an astounding success so far, with vigorous heather shoots sprouting up within the exclosures after just one season. The heather cover in an exclosure constructed in 2000 has increased from 45% to 61% in just two years, with the area of heather plants having developed to the 'building' stage (from 'pioneer' stage) almost doubling (from 30% to 59% cover).

Exclosure design may be critical; rabbits soon jumped over one which was 15.5m wide, but not one 13m wide at one side and slightly narrowing. Long narrow exclosures appear to be more successful. An insight in rabbit psychology is clearly an advantage!

Hen harrier from Cornwall, and a spider colony

In October, a wing-tagged juvenile hen harrier arrived on Skomer. A bit of detective work has revealed its origin to be the Lizard, Cornwall, the first hen harrier to have fledged in that county since 1894! It appears to be over-wintering. On Skokholm, over 200 webs of the purse web spider *Atypus affinis* were counted in the Quarry, making this the most important site in Pembrokeshire for this species.

Cetaceans

2002 was a good year for cetacean sightings on Skomer. In addition to daily porpoises, common dolphins were spotted on over a dozen dates between 27 June and 17 September. The highest counts were more than fifty off Skomer Head on the morning of 22 July and between 150 and 200 animals, which we watched for half an hour around midday on 28 August riding the bow-wave of the Irish ferry. About ten probable bottlenose dolphins were seen on 2 September, and there has been a possible sighting of a striped dolphin (in with porpoises). Three Risso's dolphins were spotted from the *Lord Hurcomb* in Broad Sound on 8 June.

Materion morol

Roedd y Prif Weinidog, Rhodri Morgan, ymhlith ymwelwyr y flwyddyn i Sgomer – i hyrwyddo twristiaeth. Roedd yn dymor magu gwael i wylanod yno – 0.14 oedd cyfartaledd cywion parau o wylanod cefnddu lleiaf. Er hynny, parhau i gynyddu y mae niferoedd gwylog ar Sgomer – o 4,000 i 14,000 ers yr 1970au. Roedd mwy nag erioed o'r llurs arni hi a Sgogwm hefyd ac roedd y pâl yn ennill tir. Cafwyd problemau oherwydd tywydd mawr a chynnydd mewn teithiau gan gychod pleser ger Sgogwm – er gwaetha' ymdrechion swyddogion, fe fu rhai yn poeni morloi. Cafwyd llwyddiant mawr gyda ffensys i gadw cwningod rhag pori ar rannau o Sgomer ac roedd hi'n flwyddyn ardderchog i weld dolffiniaid oddi yno – rhwng 150 a 200 un amser cinio.

Biodiversity *news*

Biodiversity gets legal backing

Section 74 of the Countryside and Rights of Way Act 2000 enshrines in national legislation our responsibility to conserve biodiversity in accordance with the 1992 Convention on Biological Diversity. Ministers, Government Departments and the Welsh Assembly have a duty 'to have regard to the purpose of conserving biological diversity' in carrying out their functions.

These good intentions are to be given solid meaning initially through the listing of the most vulnerable species and habitats, and the preparation of action plans which find practical ways of conserving them. On 28 November a list for Wales was published, including most of the species and habitats for which UK action plans have been published (as part of the UK BAP process). There are also some additional ones, such as lapwing, curlew and chough, brown hairstreak butterfly and field gentian.

Sue Essex, the Minister for the Environment, said on 3 Dec 2002 that the species and habitats which are identified are of special significance to the future of the countryside in Wales. In addition she said that "many of these habitats and species are of international importance and we have a special responsibility to ensure that they are nurtured and handed on to future generations in good condition."

With this strong measure of political support behind them, and the responsibility to assist them falling to the whole of Government, Section 74 offers a great opportunity for real, practical action to improve the fortunes of biodiversity in Wales. Local Biodiversity Action Plans provide a particularly valuable means of involving local communities in the future of biodiversity on the ground.

Assembly review of biodiversity

The Assembly's Environment, Planning and Transport Committee conducted a review of biodiversity during 2002, the terms of reference for which were: "To review current progress and ensure that Local Biodiversity Action Plans (LBAPs) are in place for all areas of Wales, and identify further action needed at the national and local levels to support LBAP implementation through partnerships." The Committee will present its report to the full Assembly on 25 February 2003. Glossy hard copies will be printed for distribution around the same time.

While the Assembly and UK Government have been making all the right noises about the importance of biodiversity, many hardened environmentalists dismiss much of this as greenwash: fine words, as they say, butter no parsnips.

But if the Assembly adopts the EPT Committee's ten recommendations, which go to the heart of this gap between expectation and performance, all that may change. The report finds very practical ways in which the Welsh Assembly Government and Local Authorities can demonstrate their commitment to biodiversity. For example it recommends that the Welsh Assembly Government should press all Local Authorities in Wales to adopt Local Biodiversity Action Plans (LBAPs) as supplementary planning guidance, in line with planning policy guidance, and use them to underpin Community Strategies.

The report specifies how this political commitment should be matched by resources. Recommendations include the setting up by the Welsh Assembly Government of a national Local Records Centre network, building on the Powys pilot project (see *Natur Cymru* 2, 42-44); more relevant training and research; and the establishment of 'biodiversity awards'.

When you read this, the debate will have taken place. Let us hope that the Assembly has viewed the recommendations positively, and that the real work is now beginning in earnest. Let us also hope that any changes to the political landscape which result from the Assembly elections in May make it easier rather than harder to bring biodiversity into the heart of government.

Wales Biodiversity Week 2002

Following on from the successful first Wales Biodiversity Week in August 2002 the Wales Biodiversity Group is hosting a second week from 16th-22nd June 2003. The idea is for Local BAP partnerships to organise events and activities that focus on biodiversity and people. The week includes the annual UK initiative 'Biodiversity in your Backyard' which is to be held on June 20th and 21st.
www.biodiversityday.org

Wales Biodiversity Week is successful because of the time and effort put in by local partnerships organising and running events. It also aims to strategically raise awareness of issues concerning biodiversity across Wales. The aim this year is to work with partner organisations such as the Countryside Council for Wales to provide information to the public, politicians, schools and business about biodiversity, why it is important, how it is threatened and what people can do to conserve this valuable resource.

If anyone is interested in further information or would like to organise an activity please contact **Julia Korn**, Wales Biodiversity Group Local BAP Facilitator. Tel 01248 385 793, e-mail **j.korn@ccw.gov.uk**

Newyddion bioamrywiaeth

Mae rhestr o gynlluniau gweithredu bioamrywiaeth wedi eu cyhoeddi ar gyfer Cymru, gyda chefnogaeth wleidyddol gref gan Weinidog yr Amgylchedd. Er hynny, mae rhai'n cyhuddo'r Cynulliad a Llywodraeth y DU o 'wyrddgalchu' – geiriau da heb sylwedd. Ond, os bydd y Cynulliad yn mabwysiadu deg argymhelliad gan y Pwyllgor Amgylchedd, Cynllunio a Thrafnidiaeth, bydd y bwlch rhwng disgwyliad a realiti yn cau. Gobeithio y bydd canlyniadau etholiadau'r Cynulliad yn helpu. Bydd ail Wythnos Fioamrywiaeth Cymru rhwng Mehefin 16 a 22.

Natur *mewn gwarchodfeydd*

Yma mae **Paul Williams** yn rhoi ychydig o gefndir a newyddion am warchodfa na wyr llawer amdani.

Petaech yn ymweld â gwefan Cyngor Cefn Gwlad Cymru (**www.ccw.gov.uk**), mi welech fanylion am bedair ar hugain o'n Gwarchodfeydd Natur Cenedlaethol ar hyd a lled y wlad. Mewn gwirionedd, mae dros hanner cant dan ein rheolaeth ac ymysg y lleiaf ohonynt y mae Allt y Benglog ym Meirionnydd. Dim ond 27 o aceri yw maint y warchodfa ac mae'n rhan o Safle o Ddiddordeb Gwyddonol Arbennig Craig y Benglog a gafodd gryn sylw yn astudiaethau'r naturiaethwr lleol E. Price Evans yn hanner cyntaf y ganrif diwethaf. Mewn erthygl i'r *Journal of Ecology* ym 1945 mae'n trafod perthynas ardaloedd cyfoethog eu llystyfiant â daeareg lleol, a phrif atyniad Craig y Benglog iddo oedd y goedlan ynn ucheldir a geir yno, sydd yn gynefin anghyffredin iawn yng ngogledd-orllewin Cymru. Mae'r goedlan ynn dan berchenogaeth breifat o hyd, ond fe'i reolir trwy gytundeb a chyda cydweithrediad parod y perchennog, er mwyn gwarchod y fflora blodeuol sydd yno.

Ffoto: Paul Williams.

Mae'r ceunant cul, serth sydd, ar y llaw arall yn eiddo i'r Cyngor Cefn Gwlad yn debycach i'r amryw o geunentydd eraill a geir trwy Feirionnydd, gyda'r dderwen yn brif dyfiant. Mae'r canopi trwchus dros yr afon Eiddon yn cadw'r lleithder sy'n hanfodol er mwyn cynnal poblogaethau pwysig o fwsoglau.

Ar hyd glannau'r amryw nentydd a mân-ffrydiau sydd yno mae lleiniau o goed gwern ac o bryd i'w gilydd ceir llecynnau lle mae'r pridd yn felysach ac yn cynnal ynn a chyll, a bresych y cŵn a garlleg ar y ddaear. Yn anffodus mae'r ardaloedd yma hefyd yn ddelfrydol ar gyfer masarn a ffawydd ac mae cadw rheolaeth ar eu hail dyfiant, er mwyn rhoi gwell cyfle i goed cynhenid, yn orchwyl parhaus yn yr ardaloedd lle nad oes pori.

Er gwaethaf maint y warchodfa, bu blynyddoedd cyntaf y milflwydd newydd yn rhai digon cynhyrfus. Oherwydd glawiad eithriadol ar ucheldir y Rhobell a'r Ddugallt ym mis Gorffennaf 2001 cafwyd llifogydd rhyfeddol yn yr ardal. Chwalodd waliau cerrig, tynnwyd ffensus o'r ddaear a'u gadael yn gaglau blêr ymhell i lawr yr afon, ac erydwyd torllannau. Cludwyd tunelli o gerrig hefyd yn y llif gan newid ffurf yr afon a'r ceunant. Ble cynt y cafwyd pwll dwfn lle na fentrai'r defaid, yn awr mae llif bas o ddŵr a llwybr hwylus iddynt gael mynediad i'r warchodfa i bori glaswellt newydd! Sgwriwyd pob carreg a chraig yn lân o bob tyfiant, a difyr fydd dilyn datblygiad y tyfiant newydd. Diflannodd y bont droed hefyd a bu'n rhaid cau y llwybr cyhoeddus a groesa'r warchodfa. Bûm wrthi fel lladd nadredd trwy gydol 2002 yn adnewyddu terfynau'r safle, a chyda'r cyngor sir, gosodwyd pompren newydd, gadarn i groesi'r Eiddon eto.

Yn ogystal â'r gwaith caib a rhaw ymarferol yma cynhaliwyd arolwg o gennau y safle. Cofnodwyd tua 180 o rywogaethau a bu hynny'n fodd i gadarnhau pwysigrwydd y warchodfa. Ymysg y rhain mae wyth o rywogaethau prin fel *Leptogium burgessii* a *Phyllopsoro rosei*, ond y rhywogaeth sydd wedi cynhyrfu gweithwyr yn y byd is-blanhigion yw *Biotoridium monasteriense*, a restrir yn y llyfr coch o rywogaethau sydd dan fygythiad. Cofnodwyd hwn yma yn y 1960au. Ers hynny credid ei fod wedi diflannu o Gymru ond ei fod yn tyfu o hyd mewn wyth safle yn unig yn yr Alban a Lloegr. Ar goed llwyf y mae'n tyfu gan amlaf ac felly dioddefodd yn arw oherwydd yr afiechyd a laddodd nifer fawr o'r coed hynny trwy Brydain. Yn Allt y Benglog ceir nifer o goed llwyf llydanddail (*Ulmus glabra*), ac ar un o'r rheiny mewn safle cysgodol, serth yr ail-ganfuwyd y *Biatoridium* y llynedd gan arbenigwyr lleol.

Mae'r cen yma y destun cynllun gweithredu bioamrywiaeth dan arweiniad Plantlife, gyda chyngor gan CCGC, English Nature a Scottish Natural Heritage. Yr hyn sy'n gyffrous i mi fel rheolwr un o'i safleoedd ydyw'r cyfraniad y gallwn ei wneud tuag at barhad y rhywogaeth. Trwy hel hadau a chymryd toriadau gofalus o'r goeden sy'n cynnal y cen gallwn feithrin coed llwyf ifainc, sydd â rhisgl o'r un cyfansoddiad cemegol, i'w plannu mewn llecynnau addas ar y warchodfa. Trwy hyn gallwn helpu i sicrhau presenoldeb parhaol o goed llwyf i'r dyfodol er mwyn cynnal neu hyd yn oed ymestyn nifer y cen arbennig yma. Hefyd, petai'r llwyfen bwysig yn dirywio yn ei chyfllwr, gallwn ystyried, gyda chymorth arbennigol, trawsblannu darnau o'r cen i goed addas eraill.

Er bod llwybr cyhoeddus yn croesi'r warchodfa, oherwydd natur serth a chul y safle dim ond trwy gais am hawleb y ceir mynediad i weddill y tir. Cysylltwch â swyddfa ardal y gogledd orllewin 01248 672500.

Nature in reserve

Allt y Benglog, a small and little-known National Nature Reserve, is a narrow ravine with a thick canopy, mainly of oaks, which retains the dampness essential for mosses. Around 180 species of lichen grow here. Patches of sweeter soil support ash and hazel trees. Last year local experts found a rare lichen, *Biatoridium monasteriense*, on a wych elm. Young elms are being raised from seeds and cuttings with bark of the same chemical composition in the hope that they will support a population of this lichen.

Hysbysfwrdd / NoticeBoard

March 14-15: Porcupine Marine Natural History Society Annual Conference at the National Museums & Galleries of Wales in Cardiff. Contact Jon Moore (01646 687 946; jon@ticara.co.uk) or Andy Mackie (029 20 573 311; Andrew.Mackie@nmgw.ac.uk)

Ebrill/April 9-11: Plas Tan y Bwlch *Cyflawni Bioamrywiaeth trwy gyfrwng Strategaethau Cymunedol.* Cwrs 3 diwrnod. *Delivering Biodiversity through Community Strategies.* 3-day course. Plas Tan y Bwlch 0871 871 4004 plas@eryri-npa.gov.uk

Mai/May 4: Diwrnod Côr y Bore Bach Cenedlaethol Rhyngwladol/ International Dawn Chorus Day

Mai/May 17-18: Sioe Frenhinol y Tyddynwyr/Gŵyl Ardd/Royal Welsh Smallholder Show/Garden Festival Maes y Sioe Frenhinol, Llanfair ym Mualit. Royal Welsh Showground, Builth Wells Ffôn/Tel: 01982 553683 e-bost/e-mail requests@rwas.co.uk neu ymwelwch ag/or see www.rwas.co.uk

June 14/15: Organic Gardening Weekend at the Henry Doubleday Research Organisation, Coventry. Contact Sarah Lindsay on 02476 308211 or slindsay@hdra.org.uk

Mehefin/June 16-22: Wythnos Bioamrywiaeth Cymru/ Wales Biodiversity Week Gweler *Newyddion Bioamrywiaeth* gan Julia Korn/See *Biodiversity News* by Julia Korn, tud/p.46.

Mehefin/June 21: Lansio CGBLl Partneriaeth Bioamrywiaeth Merthyr Tudful gan Howie Watkins yng Nghastell Cyfarthfa, Merthyr Tudful. Gweithgareddau a gwybodaeth ar gyfer yr holl deulu, a 'Thaith Gerdded Bywyd Gwyllt' yn y Warchodfa Natur Leol ar gyfer y rheini ohonoch chi sy'n llawn egni. **Merthyr Tydfil Biodiversity Partnership LBAP Launch** by Howie Watkins at Cyfarthfa Castle in Merthyr Tydfil. Activities and information for all the family, and a 'Wildlife Walk' in the Local Nature Reserve for those feeling energetic. Yvonne Wright 01685 726251 neu/or yvonne.wright@merthyr.gov.uk

Mehefin/June 21-27: Wythnos Llwybrau Cymdeithas y Cerddwyr. Digwyddiadau i dynnu sylw at y broblem o fod â llwybrau wedi eu cau neu lwybrau peryglus. **Ramblers' Association Footpaths Week.** Events to highlight the problem of blocked or dangerous paths. Carys Roberts 029 2034 3535 Gwefan/Website www.ramblers.org.uk

Gorffennaf/July 21-24: Y Sioe Frenhinol/ The Royal Welsh Show Maes y Sioe Frenhinol, Llanfair ym Mualit/Royal Welsh Showground, Builth Wells. Ffôn/Tel 01982 553683 e-bost/e-mail requests@rwas.co.uk Gwefan/website www.rwas.co.uk

Awst/August 2-9: Eisteddfod Cenedlaethol/National Eisteddfod Maldwyn a'r Gororau/Montgomeryshire and the Marches Ffôn/Tel 029 2076 3777

Awst/August 12-13: Sioe Ynys Môn/Anglesey County Show Ffôn/Tel 01407 720072; e-bost/e-mail info@angleseyshow.org.uk

Gwarchodfa Natur Genedlaethol **Fenns, Whixall & Bettisfield Mosses** National Nature Reserve. Pam nad ewch chi ati i archwilio un o gyforgorsydd mwyaf Prydain ar y ffin rhwng Wrecsam a Swydd Amwythig? Why not explore Britain's third largest raised bog on the Wrexham/Shropshire border? I gael manylion ynghylch digwyddiadau a llwybrau cysylltu/for details of events and trails contact 01948 880362 neu/or joan.daniels@english-nature.org.uk

Shared Earth Trust. Dewch i ddysgu am fywyd gwyllt a sut i greu cynefinoedd yng **Nghanolfan Gwarchod Fferm Denmarc** yn Llambed. Learn about wildlife and habitat creation at the acclaimed **Denmark Farm Conservation Centre** at Lampeter. I gael manylion, cysylltwch â'r/for details contact: 01570 493358. e-bost/e-mail set@denmark-farm.freeserve.co.uk neu ymwelwch ag/or see www.shared-earth-trust.org.uk *Cynllun Gwella Bioamrywiaeth 2003-05*: Mae'r Ymddiriedolaeth yn gwahodd tirfeddianwyr a chanddyn nhw ddiddordeb yng Ngheredigion i gysylltu â nhw, ni waeth pa mor fawr neu fychan yw'r tir. *Ceredigion Biodiversity Enhancement Scheme 2003-05*: The Trust invites interested landowners in Ceredigion to get in contact, no matter how large or how small the land area.

Gwasanaeth Cefn Gwlad Conwy/ Conwy Countryside Service I gael manylion ynghylch teithiau cerdded a gweithgareddau eraill, gan gynnwys rhai ar gyfer plant ffoniwch/For details of walks and other activities, including some for children, phone 01492 575200.

South and West Wales Wildlife Trust have a varied programme of events for 2003, including talks and slide shows, guided walks, visits to reserves and a chance to get your hands dirty in a Habitat Management Work Party. For full details contact the Trust on 01656 724100 or e-mail information@wtsww.cix.co.uk

For photographs and illustrations, thanks to/diolch am y lluniau i.

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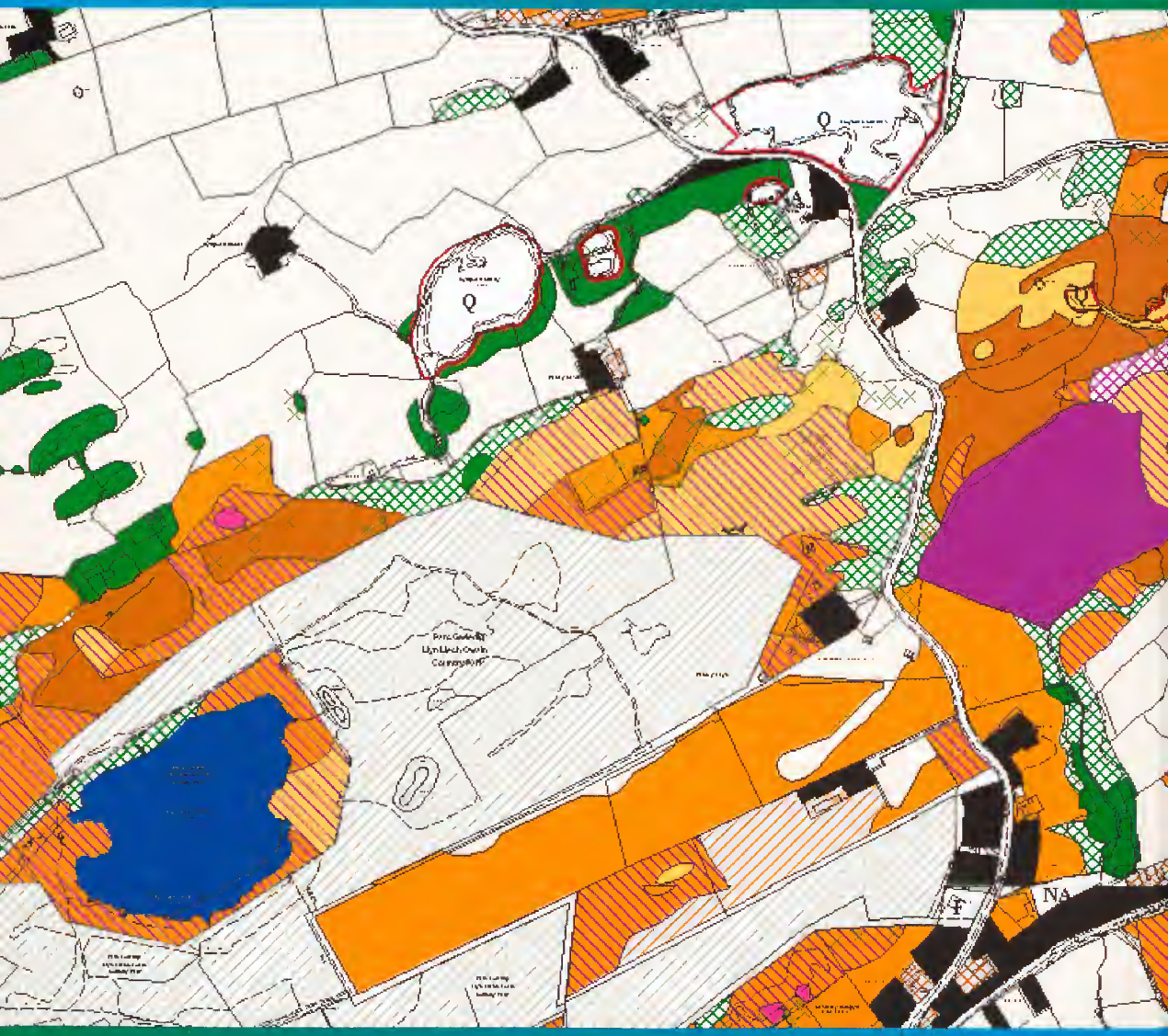
Mynydd Du, Brecon.
Photo: Stewart Campbell.



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